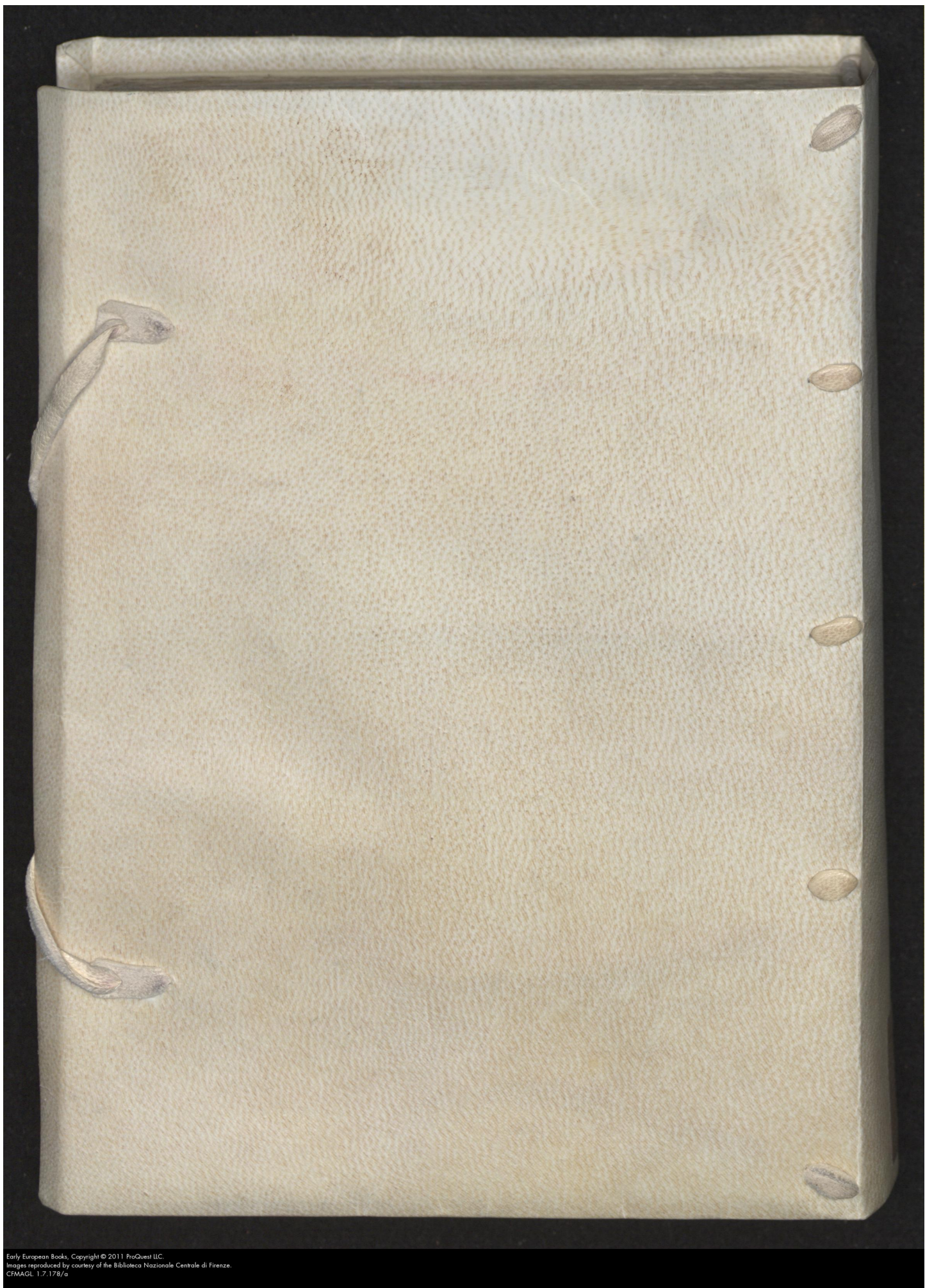




Early European Books, Copyright © 2011 ProQuest LLC.
Images reproduced by courtesy of the Biblioteca Nazionale Centrale di Firenze.
CFMAGL 1.7.178/a





Early European Books, Copyright © 2011 ProQuest LLC.
Images reproduced by courtesy of the Biblioteca Nazionale Centrale di Firenze.
CFMAGL 1.7.178/a



Early European Books. Copyright © 2011 ProQuest LLC.
Images reproduced by courtesy of the Biblioteca Nazionale Centrale di Firenze.
CFMAGL 1.7.175/a



Early European Books, Copyright © 2011 ProQuest LLC.
Images reproduced by courtesy of the Biblioteca Nazionale Centrale di Firenze.
CINAFL 1.7.178/a

1.7 1478 800.2

BIFORMIS GNOMONICÆ SYNOPSEOS

PARS SECUNDA TABVLARIS,
Theorico-Practica.

De Horologijs Solaribus describendis per Tabulas Gnomonicas,
Duos Libros continens,

In quorum

PRIMO traditur cum Vniuersalis pluriformium Tabularum Gnomonicarum Methodus, omnium facillima, & expeditissima, ex Ratiocinio, & Analyfi Triangulorum, per calculos vtriusque Trigonometrie, Linearis scilicet ac Logarithmicæ: Tum Specialis Methodus omnium pulcherrima, Peripheriæ, & Regulæ D. Ioannis Paduanij Veronensis, Demonstratione, breuitate, & facilitate mirum in modum illustratur.

IN SECUNDO habentur Tabula ipsæ, iuxta Methodum Paduanij eiusdem, concinnatæ ad singulos gradus Declinationis Muralis, ad Ortum, & ad Occasum; sub latitudine Poli grad. 45. scilicet Almæ, & Imperantis Urbis Venetiarum, & aliorum locorum quamplurimum, in eodem circiter parallelo, per Europam, Asiam, & Americam, existentium.

SYLLOGEO
AVGVSTINO A' PVTEO

I. V. D. AC MATESIPHILO.



VENETIIS, Typis Antonij Bosij, M.DC.LXXIX.

SVPERIORVM PERMISSV.

PROOEMIUM



Geometricam hactenus, & Arithmetica
Simplicem de Solaribus Horarijs de-
scribendis, pro nobili quadam, & dele-
ctabili iuventutis exercitatione, tum in
Geometria, & Arithmetica Elementari;
tum in Sphæricis, & Conicis, qua potui,
breuitate, & claritudine prosequer. Quæ quidem Me-
thodus, quantum Geometriæ Theoreticæ cognitionis, &
luminis afferat Speculanti, etiam in abditissimis Mathema-
tum arcanis, quisque primoribus saltem labris, vt dicitur,
gustare potuit. Cum tamen practicè ob multiplicem li-
nearum parallelarum, & perpendicularium descriptio-
nem, arduam, operosam, & erroribus obnoxiam ean-
dem experiantur omnes, cœteroquin etiam expertissimi:
Mathematici quidam, Triangulorum ducti ratiocinio,
aliam non immeritò iniere viam, per Tabulas videlicet
Gnomonicas, constructas ex Azimuth, & Almucantarath,
Solis nempe Circumferentijs, & Altitudinibus, in Vmbras
conuersis, quas proinde horarum longitudines, & latitu-
dines voluerunt appellari. Sed huic quoque Methodo, li-
cet minùs, quàm cœteris discrimen foret errandi, nec suus
defuit labor, in Tabulis supputandis; nec in earum vfu

140
morosa prolixitas. Quapropter utrique incommodo D. Hyppolitus Salodius faciliore calculo, Normæque Adminiculo ingeniosè conatus est occurrere. Sed (ut omittam reliqua) de Plagis horarum, quænam scilicet hora cadat in Plagam Australem, aut Borealem, quæue in Orientalem, vel Occidentalem, non parua mentis vexatio adhuc remansit Horographo. Quæ tandem difficultas, noua, & ingeniosissima D. Ioannis Paduanij Veronensis, Mathematici præstantissimi inuentione, qua Tabularum Gnomonicarum vsum, Peripheria in plano defixa, ad vnicam, simplicem, vniuniformem, & infallibilem Regulæ circumgyrandæ perstrinxit operationem, sublata foeliciter euauit. Inuentio sanè ob facilitatem, simplicitatem, & certitudinem operandi, admirabilis! & cæteris vtcunque inuentis, omnium præferenda suffragijs! Attamen, nec ista tam præclara, & facilis inuentio, Tabulis in efformandis quidquam leuat insudandi necessitatem; nec studiosus Theophili Bruni labor, siue compendij, siue facilitatis multum attulit; imò adhuc (quod sanè displicet) pulcherrimum demonstrationis lumen, cæcis supputationum nubibus penitus inuolutum, omnino torpescit otiosum. Hunc igitur lapidem, duplici ex capite prægrauem, opere pretium fore putavi, si pro mei tenuitate ingenij, hac in Secunda Parte Synopses Gnomonices mouere contenderem; ut nimirum adhibito Prosthaphæreseos, & Logarithmicæ Trigonometriæ calculo, Tabularum Gnomonicarum supputatio quam breuissima, & perquam facillima euaderet: singulisque Problematis, siue Praxibus, præ-

missio,

missio, & exposito Analemmate, obnubilata Demonstrationis aliqua species in lucem tandem erumperet; quâ Mathematicarum studiosi vtramque Trigonometriam, Linearem scilicet, ac Logarithmicam, vtili delectatione exercerent, & delectabili vtilitate in Praxim redigerent. Quæ si aliquo modo affecutus fuero, SOLI TRIADI SACRATISSIMÆ laus esto, sin minus meâ computetur imbecillitati, faciliora tamen, si ei vacasset, adhuc molituræ.

Diuidetur autem Liber iste in duo Capita, quorum primum, Calculum omnibus Tabulis Gnomonicis communem, vniuersalissima Methodo, pro quolibet horarum genere, in toto terrarum Orbe, Lineariter, & Logarithmicè proponet, & explicabit: Secundum, Fabricam Tabularum Gnomonicarum, iuxta specialem Methodum D. Ioannis Paduanij, Compendiosissimo calculo, & summa facilitate demonstrabit.



INDEX

INDEX CAPITVM. ET PRAEVEVM

Primi Libri Secundæ Partis SYNOPSIS GNONOMICÆ BIFORMIS.

CAP. DE Prærequisitis ad Gnomonicas Tabulas supputandas.	pag. 1
1. Praxis I. Declinationem Solis indagare.	ibid.
Praxis II. Altitudinem Poli inquirere ex Vmbri Meridianis.	2
Praxis III. Datis elevatione Poli, & cuiuslibet puncti Cælestis declinatione, indagare differentiam Ascensionalem Arcum Semidiurnum, ac Seminocturnum; & declinationem eiusdem.	5
Methodus inveniendi Arcus perpetuæ lucis, & Vmbre; siue perpetuæ Diei, ac Noctis, ad quamcumque propositam latitudinem Poli maiorem grad. 66. m. 30.	7
Praxis IV. Data Declinatione Solis, & Altitudine Aequatoris, Altitudinem Meridianam Solis quouis tempore inuenire.	8
Praxis V. Data utraque Altitudine Meridiana (per præcedentem praxim) indagare Altitudinem Solis in circulo horæ sextæ Astronomicæ constituti.	ibid.
Praxis VI. Altitudinem Solis in Verticali primario constituti, indagare.	9
Praxis VII. Angulos horarios, siue distantias horarias horarum Astronomicarum, seu à Meridie, & media nocte; Ab Ortū, & ab Occasu; & horarum Inæqualium assignare pro Horologijs Horizontalibus, & Verticalibus directis.	ibid.
Praxis VIII. Datis Solis Altitudine maiori generali, & eiusdem Altitudine in circulo horæ sextæ Astronomicæ (ex quinta praxi,) ac distantia horaria à Meridiano, (per præced. Prax.) Altitudinem Solis supra Horizontem, quacumque hora data, exquirere; Circa quam dantur tres casus.	13
Casus primus, quando scilicet duo latera data quadrantem exæquant.	12
Casus secundus, quando latera trianguli coniunctim sunt quadrante minor.	13
Casus tertius, datis duobus cruribus coniunctim quadrante minoribus.	15
Methodus indagandæ Altitudinis Solis existentis in Aequatore.	16
Calculus Altitudinum Cancrī, & Capricornī.	17
Omnium Altitudinum Cancrī, & Capricornī singularium horarum, calculi paradigma.	18
De reliquis Signorum parallelis.	20
Praxis IX. Data (ex antecedenti praxi) Altitudine Solis, quacumque hora, & in quouis parallelo, Vmbra illius Gnomonicam, tum rectam, tum versam metiri.	24

Pra-

INDEX.

Praxis X. Datis Angulo horario, & Altitudine Solis, Azimuth eiusdem calculo inn-	pag. 25
figare.	
Praxis XI. De Speciali Calculo Altitudinum horarum Astronomicarum, & horarum In-	26
aqualium, siue Antiquarum; & pro horarijs construendis in Regionibus sub Altitudi-	
ne Poli maiori gradibus 66 m. 30.	
De reliquis supputationibus, Azimuthorum, scilicet, & Vmbrarum pro omnibus hora-	31
rum generibus.	
CAP. II. Datis ex precedenti capite Altitudinibus, Vmbris, & Azimutibus Tabulas	31
Gnomonicas construere, iuxta Methodum Ioannis Paduanij Veronensis.	
Praxis I. Tabulam Horologij Horizontalis ordinare.	ibid.
Praxis II. Tabulam Horologij Verticalis, Meridiem, & Boream directe aspicientis con-	36
struere.	
De Angulis siue distantijs horarijs.	37
De Calculo generali trium Inuentorum priorum pro Altitudinibus.	38
Speciales calculi Altitudinum Capricorni, & Cancri.	40
Calculus Azimuthorum vtriusque Tropici.	44
Praxis III. Tabulas pro Horologijs Declinantibus a Meridiano construere.	47
De Angulis siue distantijs horarijs.	49
De Calculo Altitudinum in communi.	51
Specialis calculus Altitudinum, & Azimuthorum Capricorni pro Tabula vtriusque	
Horarij declinantis ad Ortum grad. 54 & Cancr. pro declinante usdem gradibus ad Oc-	ibid.
casum.	
Speciales calculi Altitudinum, Vmbrarum, & Azimuthorum Cancr. declinantis ad	56
Ortum, & Capricorni ad Occasum	
Speciales calculi Altitudinum & Azimut. horarum Aequatoris.	62
Arcus Peripheria pro declinantibus ab Austro, & ab Aquilone ad Ortum componere.	
pag. 66	
Arcus eosdem Peripheria conficere pro declinantibus ab Austro, & ab Aquilone ad Oc-	67
casum.	
Praxis IV. Tabulas construere pro Horologijs Verticalibus directe Ortum, & Occasum	68
aspicientibus.	
De Calculo Altitudinum, & Vmbrarum Gnomonicarum, & Azimuthorum Solis.	69
De reductione Arcuum Verticalium horarum ad Circuli Peripheriam in facie parietis	
Orientalis.	71
Arcus reducere ad Peripheriam pro Tabula Occidentali.	72
Calculi Altitudinum Vmbrarum, Azimuthorum, & Arcuum vtriusque Tabulae, ac	
Tropici paradigma.	ibid.
Praxis V. Tabulas calculo exarare pro Horologijs Sciathericis Polaribus.	76
De Distantijs Horarijs.	ibid.
De Calculo Altitudinum, Parallelorum extra Aequatorem.	77
Altitudines Aequatoris.	ibid.
De Vmbris.	ibid.
De Arcibus Azimutalibus in parallelis.	78
Arcus Azimutales Aequatoris.	ibid.
De	



M.

pag. 1
ibid.
2
indagare
declinatio
5
Noctis
7
Meridia-
8
lagare Al
ibid.
9
um, seu a
n assignare
ibid.
in circulo
mo, (per
ita, exqui
11
12
13
15
16
17
paradigma
18
20
in quouis
24
Pra-

INDEX.

De horum Arcuum reductione ad Arcus Peripheria pro Superficie Superiori.	pag. 78
Quod Sciathericum Horologium Polare cum integro Meridiano planè coincidit.	79
axis V. De Polari communiter dicto, scilicet Declinante a Meridiano, describendo.	ibidem.
Altitudines, Vmbra, & Arcus Azimuthales Cancrì, Aequatoris, & Capricorni	80
supputare.	82
Praxis VII. De Sciathericis Aequinoctialibus.	ibid.
De Altitudinibus, & Vmbra.	ibid.
De Arcubus Azimuthalibus.	ibid.
Quomodo distantia reducantur ad Arcus Peripheria.	ibid.
Quod pro descriptione horarum, præter distantias Tropicorum, requiruntur distantie al-	83
terius paralleli Aequatori viciniore.	84
Praxis VIII. Sciathericum Irregulare construere in Superficie Declinanti a Meridiano su-	85
per quam eleuat Polus Horizontalis ac Cælum, Terramue respicit.	86
Altitudines horarum inuenire, Sole in principio Tropicorum existente, quæ Methodus	87
reliquis etiam omnium parallelorum punctis deferuere poterit.	88
Data Solis Altitudine, & Angulo horario Arcus Azimuthales indagare.	ibid.
Azimuth in Arcus Peripheria conuerttere.	88
Pro declinantibus ad Occasum.	88
Praxis IX. Sciathericum Horologium Irregulare construere in plano declinante, super	ibid.
quod eleuatur Polus Verticalis.	ibid.

pag.	lin.	Errores	Correctio
9	13	Tomologarith.	Tomologarith. 2.
12	41	respondeat	respondent
30	5	ex Altitudine	ex Altitudinis
32	5	In Figura ibidem posita mutetur D, in C, & contra	
69	41	esse B,	S B
72	14	gradibus 360.	graduum 360.
88	15	Superficies, quæ	dele, quæ
28	28	Vt in Meridionale	Vt si in Meridionale

pag. 78
79
tribendo.
Capricorni
80
82
ibid.
ibid.
ibid.
Stantis al-
83
ridiano su-
84
Methodus
85
86
87
88
te, super
ibid.



GNOMONICES BIFORMIS

SECUNDÆ PARTIS, TABVLARIS.

LIBER PRIMVS.

De Sciathericis omnibus, siue Horologijs Solaribus in Terrarum Orbe vniuerso delineandis per Tabulas Gnomonicas, Triangulorum ratiocinio, Lineariter, & Logarithmicè, ex Methodo in primis D. Ioannis Paduani Veronensis concinnatas.

De ijs, quæ vniuersè requiruntur ad Gnomonicas Tabulas supputandas. Caput Primum.



AD Gnomonicas Tabulas supputandas prærequiruntur; in primis Solis Declinatio; 2, Altitudo Poli; 3, Arcus diurni Parallelorum Solis; 4, Eiusdem Solis Altitudines; 5, Vmbra; 6, Azimutha.

Praxis I. Declinationem Solis indagare.

PRæsupposita Analemmatis esplicatione, quæ tradita est in libro primo, cap. 6. Episag. 3. Primæ Partis; necnon eorum, quæ ad Circulorum Verticalium, Altitudinum, & Horariorum demonstrationem lib. 1. eodem cap. 3. Episag. 3. exposita sunt; præsens Diagramma, satis clarum appraet. Nam

A B L A,

GNO.

B L A, est Circulus horarius hora 1, vel 11, Astronomicarum, vel etiam quicunque Circulus declinationis, ut accipitur in presenti.

V L K, est quadrans Circuli Verticalis.

G I, Parallelus Tauri, & Virginis.

Æ P Q, est pars Eclipticæ Septentrionalis. Quibus positis.

- 2 Pro Solis declinationis indagine, talis adhibebitur Analogismus. Ut Radius; Ad sinum maximæ Solis declinationis grad. 23. m. 30. Ita Sinus distantia, puncti Eclipticæ dati à proximiori Æquinoctio; Ad Sinum declinationis quæsita.

Exemplum. Quæritur declinatio Solis existentis in *m*, Tauri principio, quod à proximiori Æquinoctio Æ, Arietis, distat gradibus 30. nempe arcus Æ M; Sic proportionabitur canon.

Ut Radius T Æ, 100000. Ad Solis declinationis maximæ Æ C, grad. 23. m. 30. Sinum 19875. Ita primi gradus Tauri *m*, distantia à proximo Æquinoctio Æ, grad. 30. Sinus 50000. Ad 19937. Sinum declinationis quæsita principij Tauri, quæ est Arcus L M, grad. 11. m. 30.

Vel per Logarithmos, more solito iungantur

Logarith. distantia à proximo Æquinoctio grad. 30. ————— 969897

Et Logarith. maximæ Solis declinationis grad. 23. m. 30. ————— 966670

Colligetur Logarith. declinationis quæsita grad. 11. m. 30. ————— 929967

- 3 Traditur autem hæc regula exercitationis gratia, & pro illis, qui declinationes cupiunt ad singula scrupula; cæterum declinationes omnium Signorum Zodiaci, ad singulos gradus habentur *Primæ Partis lib. 2. cap. 6. prax. 1. in Tabula*; de cuius compositione videatur *Synopsis Astronomica lib. 1. tract. 4. sect. 1. Problem. 4.*

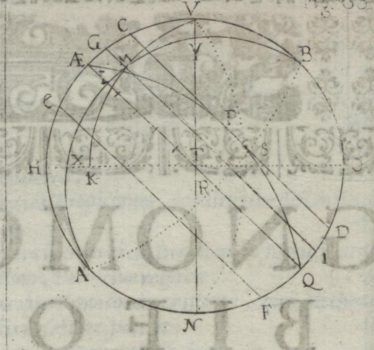
Praxis II. Altitudinem Poli exquirere ex Vmbris Meridianis.

- 1 IN Diagrammate apposito Q H A O P, sit Circulus Meridianus. H O, Horizon. P A, Planum quoduis Horizontale. P V, Planum Verticale. T, Centrum Mundi. Q, Corpus Solis. T E, Gnomon Verticalis; T F, Horizontalis.

- 2 Umbra est duplex; *Recta*, & *Versa*.

Umbra *Recta* est illa, quæ proijcitur in Planum Horizontalem, P A, à Gnomone T F, super illud perpendiculariter erecto. Cuiusmodi sunt F d, F e, F b.

Vm-



Vmbra *Verfa* est illa, quæ projicitur in planum Verticale PV, à Gnomone TE, Horizonti parallela. Veluti, Eg, Ef, Ee.

Vtraque est triplex, iuxta Solis triplicem Altitudinem; nempe centri Q, limbi supremi S, & limbi infimi I.

3 Gnomon vterque supponitur divisus in partes quotcumque determinatas decem, aut centum, aut mille, vt YZ. Deinde Meridiei momento (*per prax. 1. aut 2. cap. 4. lib. 2. primæ Partis*), accipiat eundem Gnomonis vmbra, & observetur diligenter, quot partes contineat ex illis, quarum Gnomon est 10. aut 100. &c.

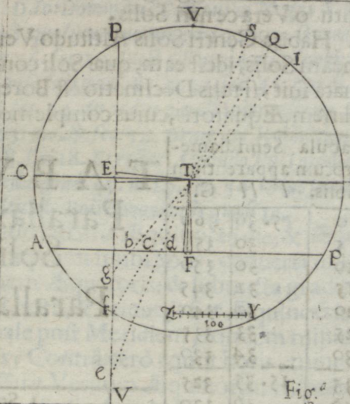


Fig.

4 His peractis, si data longitudine Vmbra Recta, *exempli causa*, Fd, partium 32. quarum Gnomon FT, est partium 100. si queratur Altitudo apparens supremi limbi Solis S; fiat.

Vt Gnomon FT, P. 100. Ad Vmbra Rectam Fd, par. 32. Ita Radius FT, 100000. Ad Tangentem 32000. Anguli FTd, distantia à Vertice V, grad. 17. m. 44. cuius complementum ad grad. 90. est angulus TdF, Altitudinis apparentis supremi limbi Solis, S; nempe grad. 72. m. 16.

5 Si autem è conuerso data Altitudine apparente supremi limbi Solis, & quantitate Gnomonis, queritur vmbra Recta, Fiat; Vt Radius FT, 100000. Ad Tangentem Fd, anguli FTd, 32000. Ita Gnomon FT, 100. Ad Vmbra rectam Fd, P. 32.

6 Si data quantitate Vmbra Versa, & Gnomonis inquitur apparens Altitudo infimi Solis limbi I; Fiat, vt Gnomon TE; Ad Vmbra Eg. Ita Radius TE; Ad Eg, Tangentem anguli ETg, mensurantis apparentem Altitudinem limbi I.

Vel Logarithmo Vmbra Versa, adde Logarithmum secundum Gnomonis TE, & fiet Mesologarith. Anguli ETg.

7 Et è conuerso data Altitudine apparente limbi infimi Solis, & Gnomonis quantitate, inuestigatur Vmbra Versa, si fiat Vt Radius; Ad Gnomonem; Ita Anguli ETg, Tangens; Ad Vmbra Versam Eg. Vel Logarithmo Gnomonis adde Mesologarithmum Anguli ETg, & fiet Logarithmus Vmbra Versa.

8 Altitudo visa Solaris marginis, seu limbi conuertitur in Altitudinem visam centri Solis, si apparens Solis Semidiameter additur limbi infimi, vel subtrahitur limbi supremi Altitudini vise.

9 Tum adde Altitudini vise centri Solis paralixim tali Altitudini con-

gruentem, & aggregato ex ijs, subtrahe suam Refractionem: supererit Altitudo Vera centri Solis.

10 Habita Centri Solis Altitudo Vera, ei detrahe Declinationem temporaneam Solis, id est eam, quæ Soli conuenit eodem Meridie, quo Umbra obseruata fuit, si talis Declinatio est Borealis; adde si Australis, & habebis Altitudinem Æquatoris, cuius complementum erit Altitudo Poli quasita.

Tabula Semidiametrorum apparentium Solis. I II G.

0	15.30	360
5	30	355
10	30	350
15	31	345
20	32	340
25	33	335
30	34	330
35	15.35	325
40	36	320
45	37	315
50	38	310
55	39	305
60	40	300
65	15.41	295
70	42	290
75	43	285
80	44	280
85	45	275
90	46	270
95	15.47	265
100	48	260
105	49	255
110	50	250
115	51	245
120	52	240
125	15.53	235
130	54	230
135	55	225
140	56	220
145	57	215
150	58	210
155	15.58	205
160	59	200
165	16. 0	195
170	1	190
175	2	185
180	2	180
Anomalía		Anoma.

TABVLA Parallaxium Solis. Parallaxis.

Altitudo.	Sol in Apo-geo.	Sol in Media distan- tia.	Sol in Peri-geo.
Gr.	II III	II III	II III
0	27. 28	28. 18	29. 8
5	25. 10	26. 10	27. 10
10	23. 20	24. 20	25. 20
15	21. 30	22. 30	23. 30
20	19. 40	20. 40	21. 30
25	17. 50	18. 50	19. 40
30	16. 0	17. 0	17. 50
35	14. 40	15. 30	16. 0
40	12. 30	13. 10	13. 30
45	11. 0	11. 20	11. 40
50	9. 30	9. 40	10. 0
55	7. 40	7. 50	8. 20
60	6. 0	6. 10	7. 0
65	5. 0	5. 10	6. 0
70	4. 0	4. 10	4. 30
75	3. 0	3. 8	3. 20
80	2. 0	2. 4	2. 10
85	1. 0	1. 2	1. 6
90	0. 0	0. 0	0. 0
I. II III IV V. VI XI. XII IX. X VII. IIX Anomalía signa.			

TABVLA Refractionum Solis.

Altitudo Appar.	Æstiu-ua.	Æqui-noctia- lis.	Hyber- na.
Gr.	I II	I II	I II
0	30. 0	31. 0	32. 0
1	22. 0	23. 0	24. 0
2	16. 0	17. 0	18. 0
3	13. 0	14. 0	15. 0
4	11. 32	12. 31	13. 30
5	10. 32	11. 31	12. 30
6	9. 35	10. 31	11. 53
7	8. 59	9. 53	11. 12
8	7. 25	8. 17	9. 34
9	6. 43	7. 33	8. 48
10	6. 15	7. 3	8. 14
11	5. 48	6. 34	7. 44
12	5. 20	6. 4	7. 12
13	4. 53	5. 35	6. 41
14	4. 26	5. 6	6. 9
15	3. 58	4. 36	5. 36
16	3. 32	4. 7	5. 4
17	3. 7	3. 38	4. 32
18	2. 26	2. 54	3. 43
19	1. 47	2. 10	2. 55
20	1. 0	1. 40	2. 21
21	0. 33	1. 11	1. 49
22	0. 14	0. 42	1. 10
23	0. 6	0. 24	0. 52
24	0. 0	0. 5	0. 30
25	0. 0	0. 0	0. 10
26	0. 0	0. 0	0. 5

Ricciol. Astron. tom. 2. Tab. 37. 39. & 40.

Exem-

Exemplum sit illud Bononiæ, quod affert P. Ricciolus *Geograph. lib. 7. cap. 5. num. 16.* his verbis. *Anno 1665. Iulij 23. D. Io: Dominicus Cassinus in Magno S. Petronij Gnomone observauit umbram P. 45098. qualium Gnomon est 100000. Quare ipsa umbra fuit tangens anguli graduum 24. m. 16. sec. 19. Id est distantia vise limbi supremi Solis à Vertice: quare eius Altitudo visa fuit grad. 65. m. 43. sec. 41. Cui si demas Semidiametrum Solis apparentem m. 15. sec. 34. & addas parallaxim nostram sec. 5. Euadit Vera Altitudo centri Solis grad. 65. m. 28. sec. 12. Deme his declinationem nostram Boream quæ tunc fuit grad. 19. m. 58. sec. 18. Et restat Altitudo Poli grad. 44. m. 30. sec. 6. Seupotius (Tyronum gratia) restat grad. 45. m. 29. sec. 54. cuius proinde complementum grad. 44. m. 30. sec. 6. Est Altitudo Poli Bononiensis quasi ta.*

11 *Nota.* Si Umbra Meridiana observatio facta sit Æquinoctij die; & Æquinoctium fiat in Meridie; Altitudo vise supremi limbi Solis, conuerfa in Veram centri Solis, dabit veram Altitudinem Æquatoris; & subtracta gradibus 90. habebis Altitudinem Poli. At quot horis, & minutis fiet Æquinoctium Vernum ante Meridiem, vel Autumnale post Meridiem, totidem minuta, & secunda deme Altitudini centri Solis; Contra verò, quot horis, minutis, & secunda praecefferit Autumnale, aut successerit Vernum Æquinoctium, totidem minuta, & secunda adde Altitudini centri Solis, & habebis complementum Alitudinis Poli.

12 Si autem observatio Umbra Meridiana sit habita die Solstitiali, Altitudinem supremi limbi Solis, reduc in centri Solis visam, ac tandem Veram, cui subtrahe declinationem Solis maximam, si Solstitium Æstiuum est; adde si Brumale; nam si fiat in ipso Meridie, habebis altitudinem Æquatoris, & hac dempta gradibus 90. Altitudinem Poli, quæ non discrepabit à Vera, plusquam 14. secundis, si Solstitium intra illum diem, quo fuit observata Umbra factum fuerit. Quot autem binarijs horarum Meridiem antecefferit, vel successerit Brumale, totidem secunda adde Altitudini Poli, prius reperta; vel subtrahe si Æstiuum successit, aut anteceffit.

13 Aliter etiam inueniri potest Altitudo Poli, ex Altitudine Solis Meridiana, ut habetur *Primæ Partis lib. 2. cap. 6. prax. 1. & cap. 11. prax. 4.*

Praxis III. Datis eleuatione Poli, & cuiuslibet puncti Cælestis declinatione, indagare Differentiam Ascensionalem, Arcum Semidiurnum, ac Seminocturnum; Et declinationem eiusdem.

1 *Fiat, Ut Radius, Ad Tangentem eleuationis Poli; Ita Tangens Declinationis, Ad Sinum differentie Ascensionalis.*

Exemplum. Queratur differentia Ascensionalis principij Cancræ, sub Eleuatione Poli grad. 45. *Fiet, Ut Radius 100000. Ad 100000. Tangentem Alitudinis Poli grad. 45. Ita 43481. Tangens declinationis principij Cancræ gr. 23. m. 30. Ad 43481. Sinum differentie Ascensionalis grad. 25. m. 46.*

erit Al-
mpora-
a obser-
Altitu-

Lid A
m

Hyber-
na.

1 11

32. 0

24. 0

18. 0

15. 0

13. 30

12. 30

11. 53

11. 12

9. 34

8. 48

8. 14

7. 44

7. 12

6. 41

6. 9

5. 36

5. 4

4. 32

3. 43

2. 55

2. 21

1. 49

1. 10

0. 52

0. 30

0. 10

0. 5

Exem-

Tabula Arcuum Semidiurnorum pro Tropicis Cancrī, & Capricorni, ad singulos gradus omnium eleuationum Poli. Qui eam cum minutis cupit, traditam supputandi Methodum adhibeat.

Alti- tudi. Poli.	Arcus Se- midiur- nus Ca- pricorni.		Arctis, I & Libra	Arcus Se- midiur- nus Can- cri.		Alti- tudi. Poli.	Arcus Se- midiur- nus Ca- pricorni.		Arctis, I & Libra	Arcus Se- midiur- nus Can- cri.		Quantitas graduum, quibus Sol in regionibus vltra Circulum Arcti- cum, & Antarcticum in occiduo perpetuo lu- cet; pro quibus singulis dies vna circiter compu- tari potest, vt gradus 40. sint quadraginta dies.	
	Gr.	M.		Gr.	M.		Gr.	M.		Gr.	M.		
0	90.	0	I	90.	0	34	72.	57	I	107.	3	I	
1	89.	34		90.	26	35	72.	16		107.	44		
2	89.	8		90.	52	36	71.	35		108.	25		
3	88.	42		91.	18	37	70.	53		109.	7		
4	88.	16	I	91.	44	38	70.	8	I	109.	52	I	
5	87.	49		92.	11	39	69.	23		110.	37		
6	87.	23		92.	37	40	68.	36		111.	24		
7	86.	57		93.	3	41	67.	47		112.	13		
8	86.	30	I	93.	30	42	66.	57	I	113.	3	I	
9	86.	3		93.	57	43	66.	5		113.	55		
10	85.	36		94.	24	44	65.	10		114.	50		
11	85.	9		94.	51	45	64.	14		115.	46		
12	84.	42	I	95.	18	46	63.	14	I	116.	46	I	
13	84.	14		95.	46	47	62.	12		117.	48		
14	83.	46		96.	14	48	61.	8		118.	52		
15	83.	18		96.	41	49	60.	0		120.	0		
16	82.	50	I	97.	10	50	58.	45	I	121.	15	I	
17	82.	22		97.	38	51	57.	30		122.	30		
18	81.	53		98.	7	52	56.	11		123.	49		
19	81.	24		98.	36	53	54.	45		125.	15		
20	80.	54	I	99.	6	54	53.	14	I	126.	46	I	
21	80.	24		99.	36	55	51.	38		128.	22		
22	79.	53		100.	7	56	49.	53		130.	7		
23	79.	22		100.	38	57	47.	58		132.	2		
24	78.	50	I	101.	10	58	45.	54	I	134.	6	I	
25	78.	18		101.	42	59	43.	40		136.	20		
26	77.	45		102.	15	60	41.	8		138.	52		
27	77.	12		102.	48	61	38.	20		141.	40		
28	76.	38	I	103.	22	62	35.	12	I	144.	48	I	
29	76.	3		103.	57	63	31.	25		148.	35		
30	75.	27		104.	33	64	26.	57		153.	3		
31	74.	51		105.	9	65	21.	11		158.	49		
32	74.	14	I	105.	46	66	12.	25	I	167.	35	I	
33	73.	36		106.	24	67	22.	52		90			

vel

Vel Mesologarithmo Altitudine Poli grad. 45. ————— 1000000

Adde Mesologarithmum declinat. datæ grad. 23. m. 30. ————— 963830

Colliges (dempta unitate in principio) Logarith. grad. 25. m. 46. ————— 963830

2. Tūm si declinatio dati puncti Cœlestis est Borealis, vt in præsentī, differentiam Ascensionalem adde gradibus 90. & si declinatio est Australis, subtrahere; nam summa, vel differentia erit arcus Semidiurnus quasitus, eiusque residuum, seu complementum ad grad. 180. erit Arcus Seminocturnus. Veluti in allato exemplo, differentia Ascensionali grad. 25. m. 46. addita gradibus 90. fiunt gradus 115. m. 46. pro Arcu Semidiurno principij Cancrī sub Altitudine Poli grad. 45. quo arcu subtrahito gradibus 180. relinquitur arcus Seminocturnus grad. 64. m. 14. pro diurno principij Capricornī. Et sic in reliquis.

3. Declinatio cuiuslibet arcus, quocumque horarum inuenietur, si fiat, Vt Sinus Totus, Ad Sinum differentie, inter arcum Semidiurnum datum, & quadrantem grad. 90. Ita Tangens complementi Altitudinis Poli, Ad declinationem quasitam. De quo videatur num. 13. prax. 5. cap. 6. lib. 2. prima part.

Methodus inueniendi arcus perpetua lucis, & umbra; siue perpetua diei, ac noctis ad quamcumque propositam latitudinem Poli maiorem grad. 66. m. 30.

4. **V**bi Altitudo Poli maior est gradibus 66. m. 30. Arcus diurnus circulum integrum grad. 360. siue horas 24. excedit. Ita, vt sub altitudine Poli grad. 90. sex menses perpetua dies eluceat; totidemque nox tenebris torpescat obscuris. Huiusce autem rei illud in causa est, quod signa Zodiaci sex ibidem supra Horizontem integræ eleuentur, sexque infra depressa iaceant.

Quæritur itaque proposita latitudine Poli, *exempli causa* grad. 75. quinam sint gradus, qui nunquam occidant, & qui nunquam orientur.

Respondeo, illos omnes gradus Eclipticæ, qui declinationem habent maiorem complemento datæ altitudinis Poli, nimirum grad. 15.

Quoniam autem in Tabella declinationum, quæ habetur in *prima part. lib. 2. cap. 6. prax. 1.* non est ad vnguem talis declinatio grad. 15. accipienda est

proximè minor grad. 14. m. 51. cui in latere dextro respondet gradus decimus Tauri, & in sinistro gradus vigesimus Leonis; tanquam duo extrema arcus Zodiaci, in quo Sol existens diem efficit perpetuum; scilicet gradus viginti postremos Tauri, totum geminorum, & Cancrī Signum, ac 20. priores gradus Leonis percurrentes; qui omnes simul, gradus centum existunt, diemque trimestrem cum diebus decem circiter efficiunt: quo Sol hac in Regione nunquam occidit; sicut è contra in oppositis gradibus Signorum Scorpionis, Sagittarij, Capricornī, & Aquarij nunquam oritur.

Quod si calculo exactiori operari libeat, cum non inuenitur ad vnguem declinatio quasita, vt in præsentī exemplo, accipienda erit pars proportio-

nalis,

Capri-
ri eam
ibeat.

aduum,
gionibus
Arcti-
ticum in
tuò lu-
singulis
compu-
adus 40.
dies.

d. Min.

2. 52

0. 0

1. 0

1. 26

0. 26

3. 22

4. 56

2. 12

0. 0

5. 16

1. 20

7. 6

1. 46

3. 22

3. 50

0. 6

4. 22

9. 36

4. 42

9. 50

4. 52

9. 58

4. 58

0. 0

Vel

nalis, more solito Astronomico; ita, vt primus terminus regulæ aureæ sit differentia inter declinationem proximè minorem grad. 14. m. 51. & proximè maiorem grad. 15. m. 10. Secundus minuta 60. Tertius differentia inter declinationem proximè minorem grad. 14. m. 51. & declinationem quæsitam grad. 20. sic.

Vt prima differentia m. 19. Ad m. 60. Ita Secunda differentia m. 9. Ad m. 28. Cuius duplum minuta scilicet 56. subtrahe à summa grad. 100. & relinquetur spatium permanentiæ Solis supra datum Horizontem grad. 99. m. 4. siue rotundè, velut in apposita hîc Tabella grad. 99.

Praxis I V. Data Declinatione Solis, & Altitudine Aequatoris, Altitudinem Meridianam Solis quouis tempore inuenire.

Alitudini Aequatoris (quæ semper est cõplementum Altitudinis Poli) declinationem Solis Borealem adde; Australem subtrahe; & habebis Altitudinem centri Solis Meridianam; veluti in exemplo sequentis praxeos.

Praxis V. Data vtraque Altitudine Meridiana (per præcedentem praxim) indagare Altitudinem Solis, in Circulo horæ sextæ Astro-nomica, constitui.

Quæritur, *exempli causa*, Altitudo Solis, dum grad. 90. abest à Meridiano in principio Cancrî constitutus; sub Altitudine Poli grad. 45. Primum (*ex præcedenti praxi*) inquire Solis Altitudinem Meridianam in principio Cancrî, & in opposito parallelo Capricorni; sic.

CALCVLI FORM A. I G. M. I Sinus

Altitudini Aequatoris	145. 0	
Addè Solis declinationem in principio Cancrî	23. 30	
Habes Altitudinem Solis Meridianam princip. Cancrî	168. 30	1 93042
Subtrahe gr. eodẽ 23. m. 30. Habes Alt. in princ. Capric.	121. 30	1 36650
3 Tum colligè vtriusque Altitud. Sinum, sit Bissinus		1 129692
Cuius medietas vocatur Altitud. maior Generalis		1 64846
Hanc subtrahe Sinui Alt. Cancrî, relinquitur Sinus	16. 23	1 28196
Altitudinis Solis existentis in Circulo horæ sextæ Astro-nomicæ.		1

Idem Aliter.

Fiat, Vt Radius 10000. Ad 70711. Sinum eleuationis Poli grad. 45. Ita 39875. Sinus declinationis dati paralleli Cancrî gr. 23. m. 30. Ad 28196.

Si-

Sinum Altitudinis Solis, existentis in Circulo horæ sextæ Astronomicæ gr. 16. m. 23. quæ etiam Altitudo minor Generalis appellatur.

Monitum pro Methodo precedenti.

SI aggregatum ex Altitudinē Equatoris, & Solis declinatione superat grad. 90. accipiendus est aggregati eiusdem Sinus Complementi ad gradus 180. & reliqua peragenda, vt prius.

Praxis VI. Altitudinem Solis in Verticali Primario, constituti, indagare.

Quærat prædicta Altitudo Solis existentis in principio Cancrī, cuius declinatio est grad. 23. m. 30. sub Altitudine Poli grad. 45.

Fiat, Vt Sinus Altitudinis Poli; Ad Sinum declinationis Solis: Ita Radius ad Sinum Altitudinis Verticalis.

Vel Logarithmo declinationis Solis grad. 23. m. 30. ————— 960070

Adde Tomologarithmum Altitudinis Poli grad. 45. ————— 15051

Colliges Logarith. Altit. Solis in Vertical. primario grad. 34. m. 20. 975121

Praxis VII. Angulos horarios, siue distantias horarum Astronomicarum, seu à Meridie, & Medianotte: Ab Ortū, & ab Occasū: & horarum inæqualium assignare pro Horologijs Horizontalibus, & Verticalibus directis.

His suppositis, quæ diximus lib. 1. Epifagoge 3. cap. 3. primæ partis, de horis, & circulis horarijs; Angulus horarius, est Angulus ille, quem circulus quinis horarius facit cum Meridiano: eumque metitur Equatoris arcus, inter Meridianum, & quemcumque circulum horarium interceptus. Vt in schemate *praxis primæ huius capitis*, in quo circulus B L A, est circulus horæ vndecimæ Matutinæ; aut primæ Vespertinæ Astronomicæ; & circulus V H N O, Meridianus; Angulus horarius, siue distantia horarum prædictarum, est Angulus L B A, quem metitur arcus Equatoris A L, graduum 15. Ratio est, quia ex dictis loco modò citato, singuli horarum æqualium circuli (de quorum numero est etiam Meridianus) distant ab inuicem quindenos Equatoris gradus.

Distantia, siue anguli horarum Astronomicarum.

Hinc horarum Astronomicarum distantia habentur ducendo horas singulas Pomeridianas, 1. 2. 3. 4. &c. in 15. Equidistant autem à Meridiano prima Pomeridiana, & vndecima Antemeridiana; secunda Pomeridiana, & decima Antemeridiana, &c. sicut etiam æquidistantes ab hora sexta eandem habent distantiam, vt patet in Tabella.

B

3 Ob-

aurea sit
& proxi-
mitia inter
n quæsi-

Ad m.
& relin-
99. m. 4.

dinem

dinis Po-
ne, & ha-
equentis

m)

Meridia-
45.

Meridia-

Sinus

93042

36650

129692

64846

28196

ad. 45. Ita
Ad 28196.

Si-

3 Observandum est autem nullam distantiam arcum Semidiurnum Cancrī ad latitudinem Poli datam excedere. Deinde eandem Capricorno etiam deferuire. Et pro Equinoctiali retinendas tantum illas, quæ gradus 90. non superauerint. Ac tandem huiusmodi Astromonicarum horarum distantias, esse Vniuersales, & cuius Horizonti accommodatas.

*Distantia horarum ab Ortū, &
ab Occasu.*

Hora ante Me- ridiem.	Hora post Me- ridiem.	Distantia Solis à Me- ridiano.
		Horæ 1 Horæ 1 Gra. Min.
	12	0. 0
11	1	15. 0
10	2	30. 0
9	3	45. 0
8	4	60. 0
7	5	75. 0
6	6	90. 0
5	7	75. 0
4	8	60. 0

4 Arcus Semidiurnus cuiuscumque dati paralleli Solis (exempli causa principij Cancrī, sub altitudine Poli gr. 45. qui, ex praxi 3. huius capituli, patet esse grad. 115. m. 46.) semper est angulus, siue distantia horæ 24. Cui subtractis gradibus 15. relinquitur distantia horæ 23. grad. 100. m. 46. & hunc rursus gradibus 15. subtractis, remanent grad. 85. m. 46. distantia horæ 22. Et sic deinceps, donec subtractio 15. graduum fieri non possit. Ac tunc vltima distantia inuenta, grad. 10. m. 46. quæ est horæ 17. immediatè sequentis post Meridiem ex gradibus 15. dempta relinquet distantiam grad. 4. m. 14. pro hora 16. immediatè antecedenti Meridiem; cui si addantur 15. gradus, habebitur distantia horæ 15. Et sic de cæteris, quousque aggregatum ex vltima distantia, & gradibus 15. non excedat arcum diurnum propositi paralleli Cancrī (in præsentī exemplo) grad. 115. m. 46. Vt in Tabella.

Tabula distantiarum horarum à Meridiano in principio Cancrī, sub Altitudine Poli grad. 45.

Gra. Mi.	Hora ab Occasu.	Hora Babylonica.	Hora Capricorni respondentes horis in Cancro.
115. 46	Arc. diurn. Minue.		12
15.			
100. 46	23	1	13
85. 46	22	2	14
70. 46	21	3	15
55. 46	20	4	16
40. 46	19	5	17
25. 46	18	6	18
10. 46	17	7	19
15. 0	Minue		
10. 46			
4. 14	16	8	20
19. 14	15	9	21
34. 14	14	10	22
49. 14	13	11	23
64. 14	12	12	24
79. 14	11	13	25
94. 14	10	14	22
109. 14	9	15	21

5 Idem

5 Idem porro sunt anguli, siue distantia, & Altitudines horarum ab Occasu, & ab Ortus, quæ in opposito parallelo simul numerum 24. conficiunt, & contrâ. Ita hora 14. ab Occasu, in Cancro, & hora 10. ab Ortus, in Capricorno; necnon hora 10. ab Occasu in Capricorno, & hora 14. ab Ortus, in Cancro, eandem habent distantiam à Meridiano, & eandem Altitudinem super Horizonte.

6 Pro horis Æquinoctialis, distantia horæ 24. erit gradus 90. distantia horæ 23. grad. 75. hoc est semper gradibus 15. minus, ad horam 18. usque, cuius distantia est 0. atque istæ valent etiam pro Antemeridianis; ut patebit infra.

Distantia horarum inæqualium.

7 Arcum Semidiurnum dati paralleli, diuide per 6. vel Arcum diurnum per 12. & quotus erit distantia horæ 5. & 7. à Meridiano. Eadem duplata fiet distantia quartæ; & octauæ; & sic in cæteris.

Exemplum. Sole in principio Cancræ constituto, Arcus Semidiurnus, est grad.

115. m. 46. quo in sex partes diuiso; vel Arcu integro gr.

231. m. 30. in 12. partes distributo, quotus grad. 19. m. 18. rotundè, erit distantia horæ 5. & 7. idem.

duplatus fit gradus 38. m. 36. distantias horarum 4. & 8. & c. ut hora 12. sit Arcus Semidiurnus integer.

Eodem modo etiam operabimur circa arcum Semidiurnum Capricorni. Et pro Æquinoctiali distinguuntur horarum distantia, prout in Astronomicis.

Tabella distantiarum horarum Inæqualium à Meridie.

Hora Antemeridia.	Hora Pomeridianæ.	Distantia Cancræ.	Distantia Capricorni.
		Grad. M.	Grad. M.
6		0. 0	0. 0
5	7	19. 18	10. 42
4	8	38. 36	21. 24
3	9	57. 54	32. 6
2	10	77. 12	42. 48
1	11	96. 29	53. 31
12		115. 46	64. 14

Praxis VIII. Datis Solis Altitudine maiori generali, & eiusdem Altitudine in circulo horæ sextæ Astronomicæ ex quinta praxi; ac distantia horaria à Meridiano, per VII. praxin, Altitudinem Solis supra Horizontem, quacumque hora data, exquirere.

1 IN Diagrammate apposito (in quo omnia se habeant, ut supra in prima praxi) consideretur triangulus V B M, cuius nota sunt duo latera, V B, & M B, & angulus ab illis comprehensus, V B M.

2 Latus V B, semper est distantia Verticis à Polo, siue Altitudo Æquatoris, quæ perpetuò est complementum altitudinis Poli ad grad. 90.

3 Latus MB, semper est complementum declinationis maximæ Solis grad. 66. m. 30.

4 Angulus VBM, comprehensus ab illis, est semper distantia horæ datæ à Meridiano, quam metitur arcus Æquatoris, interceptus inter Meridianum, & Circulum horæ propositæ, ut in præsentî, arcus ÆL.

5 Circa latera tres sunt casus. Primus. Quando simul sumpta quadrante, scilicet grad. 90. exæquât. Secundus, quando coniunctim sunt quadrante minora. Tertius, cum simul sunt quadrante Maiora.

6 Circa angulum sunt duo casus.

Est enim, vel acutus, vel obtusus. Si est acutus, in regula aurea accipitur Sinus, vel Logarithmus eius complementi; Si est obtusus, sumitur Sinus, vel Logarithmus excessus eiusdem supra quadrante grad. 90.

Solutio primi casus lineariter, & logarithmice.

7 **E**xemplum. Quaratur Altitudo Solis in Cancro horæ 2. vel 10. sub Altitudinem Poli grad. 66. m. 30. Triangulus VBM, ita se habet.

Crus maius, MB, ut in reliquis omnibus est grad. 66. m. 30. nempe complementum declinationis Solis existentis in principio Cancri.

Crus minus VB, est grad. 23. m. 30. complementum scilicet Alitudinis Poli, quod semper est altitudo Æquatoris, & distantia Poli à Vertice.

Angulus VBM, horæ 2. vel 10. Astronomica est grad. 30. ut patet supra in Tabula praxis 7. num. 2.

8 His datis complementum basis VM, nempe MK, quod semper est Altitudo Solis quæsitæ, sic inuenies.

1 Accipe duplum Cruris minoris dati gr. 47. vel Crus minus iungatur complemento Maioris, & fiet similiter grad. 47.

2 Huius dupli accipiat Sinus, qui erit *Inuentum primum* ——— 73135

Altitudo Solis Meridiana Borealis.

3 Huius Sinus Semissis, sit *Inuentum secundum* ——— 36568

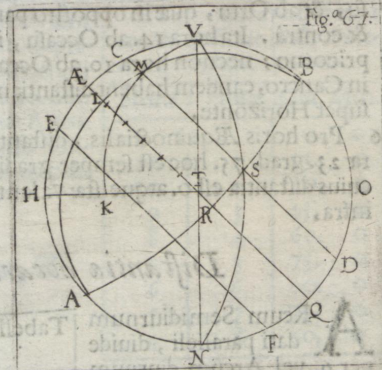
4 Horum Sinuum Differentia sit *Inuentum tertium* ——— 36567

Altitudo horæ sextæ Astronomica.

5 Complementum anguli dist. hor. grad. 30. Sin. *Inuentum quartum*. 86602

6 Tum fiat. Ut Radius 100000. Ad *Inuentum secundum* 36568. Ita *Inuentum quartum* 86602. ad *quintum* 31678. cui adde *Inuentum tertium* 36568. colliges *Inuentum sextum & vltimum* 68246. cui respondeat grad. 43. m. 2. Altitudo Solis quæsitæ.

Sin



Sin autem subtrahes idem *Inuentum quintum* ab eodem *Inuento tertio*, colliges aliud *Inuentum* 4890. cui respondent grad. 2. m. 48. pro Solis depressione infra Horizontem in principio Capricorni, eadem hora data.

Logarithmicè.

9	Logarithmo Inuenti secundi generali	656311
	Iungatur Logarithmus secundus angul. horarum grad. 30.	963753
	Colliges Logarithmum	950064
	Cui responder Sinus, qui est <i>Inuentum quintum</i>	31675
	Addendus, & subtrahendus <i>Inuento tertio</i> , vt priùs	36568
	Colligitur Sinus grad. 43. m. 2. pro Altitudine Solis horæ datæ	68243
	Relinquitur grad. 2. m. 48. Altitud. respondentis horæ	4893

Notanda circa angulum acutum, vel obtusum.

10 Quando angulus horarius datus existit acutus, vt in allato exemplo, *Inuentum quintum* addendum est *tertio*, & aggregatum erit Sinus Altitudinis Solis quæsitæ; Differentia verò illorum, erit Sinus Altitudinis Solis respondentis horæ in opposito parallelo.

11 Quando angulus est obtusus, idest quadrante maior, conferes idem *Inuentum quintum* cum *Inuento tertio*. Et si *Inuentum quintum* fuerit maius *Inuento tertio*, eorum differentia erit Sinus Altitudinis Solis respondentis horæ in opposito parallelo; aggregatum verò Sinus Altitudinis horæ quæsitæ. Sinus *Inuento tertio*, differentia illorum dabit Sinum Altitudinis quæsitæ; & aggregatum erit Sinus Altitudinis horæ respondentis in opposito parallelo.

12 Exemplum. Queratur Altitudo Solis existentis in principio Cancri hora 7. à Media nocte, & 5. à Meridie, cuius angulus horarius, siue distantia à Meridiano est grad. 105.

	Logarithmo Generali, <i>Inuenti secundi</i>	956311
	Iungatur Logarithmus excessus singuli grad. 15.	941300
	Colligitur Logarithmus	897611
	Huius Sinus 9469. quod est <i>Inuentum quintum</i> , minus <i>Inuento tertio</i> 36568.	
	ei subtrahatur, relinquitur Sinus 27399. cui respondent grad. 15. m. 43. Altitudo Solis quæsitæ; eidem additus, tribuit Sinum 46037. cui respondent gradus 27. m. 25. Altitudo Solis horæ respondentis in opposito parallelo.	

Secundicafus præceptio. Quando scilicet latera trianguli V B M, coniunctim sunt quadrante minora:

1 Complementum Cruris maioris, hoc est declinatio Solis maxima grad. 23. m. 30. adde Cruri minori, quod semper est complementum Alti-

tudi-

rudinis Poli, seu (quod in idem recidit) Altitudo Æquatoris, aut distantia Poli à Vertice, & aggregati Sinus erit *Inuentum primum*, seu Altitudo Solis Meridiana.

2 Crus minus auferatur à complemento maioris (hic enim semper Crus minus cedit complemento maioris) quare residui istius sinus, auferendus ab *Inuento primo*, atque huius residui semissis erit *Inuentum secundum*.

3 Hoc *Inuentum secundum* subtrahe ab *Inuento primo*, & reliquus dabit *Inuentum tertium*.

4 Sinus Complementi Anguli dati, quando datur acutus: vel excessus eiusdem supra circuli quadrantem, si detur obtusus, dabit *Inuentum quartum*.

5 Tùm, fiat, Vt Radius, Ad *Inuentum secundum*; Ita *Inuentum quartum*, ad *Inuentum quintum*.

6 Si datus angulus existit acutus, tunc aggregatum *Inuenti quinti*, atque *Inuenti tertij*, erit sinus Altitudinis Solis quæsitæ.

Sin autem angulus datus existit obtusus, tunc Sinus altitudinis Solis erit differentia *Inuenti tertij*, & *quinti*, si quando *Inuentum quintum* cedat, fueritque minus *Inuento tertio*; contra, si præster, fueritque *Inuentum quintum* maius *Inuento tertio*; tunc enim eorum differentia dabit sinum altitudinis Solis quæsitæ.

Exemplum, per Sinus.

14 **Q**Varatur altitudo Solis existentis in principio Cancrì hora 3. vel 9. Astronomica sub altitudine Poli grad. 72. in quo quidem exemplo Crus maius est complementum declinationis Solis maximæ MB: Crus minus distantia Polia Vertice VB, seu altitudo Æquatoris AH, grad. 18. Vnde calculus tùm generalis, tùm specialis pro altitudine Solis horæ datæ 3. vel 9. ita disponitur.

CALCVLVS.		I G. M. I Sinus
Declinatio Solis maxima MB.	[23. 30]	
Altitudo Æquatoris AH.	[18. 0]	
Aggregatum, cuius Sinus est <i>Inuent. I.</i>	141. 30	66262
Differentia, cuius sin. auferend. ab <i>Inuent. I.</i>	15. 30	9585
Sinum differentia.	I	56677
Huius differentia semissis. <i>Inuent. II.</i>	I	28339
Hoc <i>Inuent. II.</i> sublato à <i>I.</i> relinquitur <i>III.</i> Alt. hor. 6.	[22. 17]	37923
quod <i>Inuentum tertium</i> semper est Sinus altitudinis horæ sextæ Astronomicae.		
Anguli horæ 3. vel 9. Astronomicae complementum est grad. 45. eiusque Sinus est <i>Inuentum IV.</i> grad. 45. m. o.		
Fiat igitur, Vt Radius 100000. Ad <i>Inuentum secundum</i> , 28339. Ita <i>Inuentum</i>		70711

tum quartum, 70711. Ad Inuentum quintum.	20038
Cui Inuento quinto, adde Inuentum tertium.	37923
Colliges sinum altitudinis quæsitæ grad. 35. m. 25.	57961

Idem exemplum Logarithmice.

15 L ogarithmo Inuenti secundi generali	945249
lungatur Logarith. 2. anguli horarij grad. 45.	984948
Colligitur Logarithmus	930197
Huic Logarithmo respondet Sinus	20051
Aggregandus Inuento tertio	37923
Et colligitur Sinus grad. 35. m. 25. Altitudinis quæsitæ, vt prius.	57974

16 *Præceptio tertij casus, datis scilicet duobus Cruribus, coniunctim quadrante maioribus.*

- 1 **C**omplementum Cruris maioris addatur minori, & aggregati Sinus erit Inuentum primum.
- 2 Idem Complementum, (quod semper hic minus) auferatur minori cruri, residuumque Sinus ad Inuentum primum addatur; & aggregati semissis dabit Inuentum secundum.
- 3 Inuentum secundum sublatum ab Inuento primo; Tertium relinquet.
- 4 Cœtera eodem plane modo acquies, ac in antecedenti casu.

Exemplum, per Sinus.

- 17 **Q**uaratur altitudo Solis existentis in principio Cancrî hora 4. vel 8. Astronomica, sub altitudine Poli grad. 47.
 Latus MB, maius est similiter grad. 66. m. 30.
 Latus minus VB, distantia Poli à Vertice est grad. 43.
 Angulus horarius hora 4. vel 8. est grad. 60.

CALCVLVS.	I G. M. I Sinus
Altitudo Æquatoris, seu distantia Poli à Vertice	1 43. 0 1
Declinatio Solis maxima	1 23. 30 1
Aggregatum, cuius Sinus est Inuentum I.	1 66. 30 1 91706
Differentia	1 19. 30 1 33381
Sinum aggregatum	1 1 125087
Huius aggregati semissis Inuentum II.	1 1 62543
Hoc subtracto ab Inuento I. remanet III.	1 1 29163
Complementum ang. horar. 4. vel 8. grad. 60. Sinus IV. I 30. 0 1	50000
	Tum

Sinus

66262

9585

56677

28339

37923

omica.

eiusque

70711

ta Inuen-

tum

Tum fiat, Vt Radius 100000. Ad Inuentum secundum	62543
Ita Inuentum quartum 50000. Ad Inuentum quintum	31271
Cui adde Inuentum tertium	29163
Colliges Sinum altitudinis quasita grad. 37. m. 11.	60434

Idem exemplum, Logarithmicè.

18 Logarithmo Inuenti secundi, generali	979621
Augatur Logarithmus secundus anguli horarij grad. 60.	969897
Colligitur Logarithmus	949518
Cui responder Sinus	31261
Addendus Inuento tertio	29163
Et colligitur vt prius Sinus grad. 37. m. 11.	60424
Aliter etiam altitudines Solis calculo exarare docuimus supra primæ partis lib. 2. cap. 11. prax. 6. num. 13.	

19 Methodus indaganda Altitudinis Solis existentis in Equatore.

Superior Methodus est quidem necessaria in supputandis altitudinibus Solis existentis in quouis parallelo extra Equatorem; at si in Equatore Sol diuerfetur, eius altitudo hac simplici manifestabitur Analogia.

Vt Radius, Ad Sinum altitudinis Equatoris; Ita Sinus complementi anguli horarij, ad sinum altitudinis quasita.

Exemplum.

20 Queratur altitudo Solis in Equatore existentis hora 4. vel 8. Astronomica sub altitudine Poli grad. 45.	
Fiet, Vt Radius 100000. Ad altitudinis Equatoris grad. 45. Sinum	
70711. Ita complementi anguli horarij grad. 60. m. 0. Sinus 50000. ad	35355
Sinum grad. 20. m. 42. altitudinem Solis quasitam.	
Vel Logarithmicè.	
Logarithmo altitudinis Equatoris grad. 45.	984048
Addatur Logarithmus secundus anguli horarij grad. 60.	969897
Colligitur Logarithmus altitudinis Solis grad. 20. m. 42.	954845

Exemplum generale.

21 Proponantur inuestiganda omnium horarum altitudines in vtroque parallelo Tropicorum Cancr. & Capricorni, & in Equatore pro constructione Horologij Horizontalis sub altitudine Poli grad. 45.

Cal.

Calculus Altitudinum Cancrī, & Capricorni.

22 **I**N hoc exemplo latus maius trianguli MBV, est MB, complementum scilicet maximæ declinationis Solis existentis in principio Cancrī grad. 66. m. 30. Crus minus VB, distantia Poli B, à Vertice V (quæ semper est æqualis altitudini Æquatoris HÆ,) est grad. 45. ac proinde ambo simul iuncta, quadrante sunt maiora, nempe grad. 111. m. 30. ideò procedendum est in calculo propositarum altitudinum, per tertium casum, sic.

CALCVLI FORMA.

I G. M. & Sinus

Crus minus, idest Altitud. Æquatoris	I 45. 0 I	
Complementum Cruris maioris	I 23. 30 I	
Aggregatum, cuius Sinus est Inuentum I.	I 68. 30 I	93042
Differentia	I 21. 30 I	36650
Sinum aggregatum	I	I 129692
Huius aggregati semissis, Inuentum II.	I	I 64846
Idem ab Inuento I. sublatum, Inuentum III.	I	I 28196

23 *Nota primò.* Iste calculus est generalis. Nam *Inuentum secundum*, & *tertium*, communia sunt omnibus altitudinibus Solis in datis parallelis supputandis; vt mox videbitur.

24 *Nota secundò.* Quantitas angulorum distantiarum horariorum habetur ex *praxi 7 huius libri*. Vt in præsentī pro horis Italicis in tropicis, quarum altitudines quærimus, habentur in Tabula ibidem posita *num. 4*.

25 *Nota tertio.* Distantiæ, siue anguli horarum Cancrī, deseruiunt etiam horis Capricorni, iuxta ordinem respondentiarum earum in quinta columna eiusdem Tabellæ. Distantia enim horæ 23. Cancrī, eadem est, ac distantia 13. Capricorni; Distantia horæ 22. Cancrī eadem, ac distantia horæ 14. Capricorni, &c. ex quo fit, vt eadem supputatione altitudinum Solis in Cancro, habeantur simul Altitudines paralleli oppositi Capricorni. Qua de re.

26 *Nota quarto.* Si angulus horarius est quadrante maior, & pro calculo *Inuenti quinti* acceptus fuit Sinus, aut Logarithmus excessus, (iuxta præcepta *num. 11. huius praxis*;) *Inuentum quintum* subtrahæ *Inuento tertio*, & habebis Sinum altitudinis Cancrī; adde, & conflabitur Sinus altitudinis respondentis horæ in opposito parallelo Capricorni. Si verò angulus horarius fuit quadrante minor, contra *tertio quintum* addas *Inuentum* pro altitudinibus Cancrī; ac subtrahas, pro Capricorno.

Immo eadem altitudo Capricorni, est etiam altitudo alterius horæ Cancrī eiusdem, dummodo arcum diurnum illius non excedat. *Exempli causa*, Altitudo, quæ pro Capricorno inuenta est cum altitudine horæ 23. Cancrī, est etiam altitudo horæ 11. eiusdem Cancrī; & sic Altitudo, quæ inuenta

C

fuit

62543
31271
29163
60434

979621
969897
949518
31261
29163

60424
ma partit

nt is

itudinibus
in Æqua-
logia.
menti ar-

Astrono

45. Sinum
ad 35355

984048
969897
954845

utroque
pro con-

Cal

fuit cum hora 22. est hora 10. quæ cum hora 21. hora 9. quæ cum hora 20. hora 8. &c. ut patet in sequenti calculo horæ 23. 22. 21.

27 *Nota quinto.* Illas tantum altitudines horis delineandis conducere, quarum distantia semidiurnum arcum non excedunt; velut in horis Cancrî, huius exempli, grad. 115. m. 46. & in horis Capricorni grad. 64. m. 14.

28 Quibus prænotatis accipe *Inuenti secundi* Logarithmum 981180. qui communis erit omnibus horis propositi paralleli. Huic, ut nimis prolixam multiplicationem Sinuum euites, adde Logarithmum secundum (hoc est complementi) anguli, siue distantie horarie singularum horarum; & collecti Logarithmi Sinus, erit *Inuentum quintum*, addendum, vel subtrahendum *Inuento tertio*; ut sequitur.

*Omnium Altitudinum Cancrî, & Capricorni
singularum horarum calculi
paradigmata.*

Hora	Distantia [Grad. M.]	Logarithmi	Sinus	Altitudin. [Grad. M.]
23, & 11 55; ac 13 30	100. 46	Logarit. excess. 927140 Log. Inu. 2. cõis. *981180 Log. Inuent. 5. 908320 Sinus	*28196 12129 { Subtrahe	Inuent. 3. Inuent. 5.
		Differen. Sin. alti. quæst. h. 23. 55	16667	9. 15
		Summa Sin. alti. h. 11. 55, & 13. 30	40325	23. 47
22, & 10 55; ac 14 30	85. 46	Logarith. secundus 886816 *981180 867996	*28196 4798 { Collige	
		Summa Sin. Altitud. hor. 22. 55	32994	19. 16
		Differ. Sin. alti. h. 10. 55, & 14. 30	23398	13. 32
21, & 9 55; ac 15 30	70. 46	Logarith. secundus 951774 *981180 932954	*28196 21360	
		Summa Sin. Altitud. hor. 21. 55	49556	29. 42
		Differ. Sin. alti. h. 9. 55, & 15. 30	6836	3. 55
				Hora

Hora	Distantia Grad. M.	Logarithmi	Sinus	Altitudin. Grad. M.
20	55. 46	Logarith. secundus 975017 *981180 956197	28195* 36460	
		Summa Sin. Altitud. hor. 20. 55	64656	40. 18
		Differ. Sin. Altitud. hor. 16. 30	8264	4. 45
19	40. 46	Logarith. secundus 987931 *981180 969111	28196* 49116	
		Summa Sin. Altitud. hor. 19. 55	77312	50. 38
		Differ. Sin. Altitud. hor. 17. 30	20920	12. 4
18	25. 46	Logarith. secundus 995451 *981180 976631	28196* 58378	
		Summa Sin. Altitud. hor. 18. 55	86574	59. 58
		Differ. Sin. Altitud. hor. 18. 30	30182	17. 34
17	10. 46	Logarith. secundus 999229 *981180 980409	28196 63697	
		Summa Sin. Altitud. hor. 17. 55	91893	66. 46
		Differ. Sin. Altitud. hor. 19. 30	35501	20. 48
16	4. 14	Logarith. secundus 99881 *981180 981061	28196* 64657	
		Summa Sin. Altitud. hor. 16. 55	92853	68. 14
		Differ. Sin. Altitud. hor. 20. 30	36461	21. 23

Horæ	Distantie Grad. M.	Logarithmi	Sinus	Altitudin. Grad. M.
15	19. 14	Logarith. secundus 997506 *981180 978686	*28196 61222	
		Summa, Sin. Altitud. hor. 15. 55	89418	63. 25
		Differ. Sin. Altitud. hor. 21. 20	33026	19. 17
14	34. 14	Logarith. secundus 991738 *981180 972918	*28196 53607	
		Summa, Sin. Altitud. hor. 14. 55	81803	54. 54
		Differ. Sin. Altitud. hor. 22. 20	25411	14. 44
13	49. 14	Logarith. secundus 981490 *981180 962670	*28196 42341	
		Summa, Sin. Altitud. hor. 13. 55	70537	44. 52
		Differ. Sin. Altitud. hor. 23. 20	14145	8. 8
12	64. 14	Logarith. secundus 963820 *981180 945000	*28196 28178	
		Summa, Sin. Altitud. hor. 12. 55	56374	34. 20
		Differ. Sin. Altitud. hor. 24. 20	18	0. 0

De reliquis parallelis.

29 **H**Ac eadem Methodo supputantur altitudines aliorum parallelorum Zodiaci; & vnico quidem calculo quatuor signorum altitudines. Eadem est enim altitudo eiusdem horæ Geminorum, & Leonis, & in opposito parallelo altitudo initij Sagittarij, & Aquarij. Itidem eadem altitudo est initij Tauri, & Virginis, ac in opposito parallelo, Scorpionis, & Piscium.

Exem-

Exemplum paralleli Geminorum. In quo unica operatione, singularum horarum altitudines in initijs Geminorum, & Leonis, Sagittarij, & Aquarij exantlantur.

Supponendum est autem Primum propositi Geminorum paralleli declinationem ex prim. part. lib. 2. cap. 6. prax. 1. esse grad. 20. m. 13.
Secundo; Arcum diurnum eiusdem paralleli (ex praxi 3. huius capituli) esse grad. 111. m. 36. Quibus si gradus 15. subtrahas, relinquetur angulus, siue distantia horaria horæ 23. gradus 96. m. 36. & sic deinceps pro reliquis horis, per quindenorum graduum subtractionem, cæteras distantias horarias acquies; iuxta praxim 7. num. 4. huius capituli.
Tertio; latus maius trianguli horarij in hoc exemplo erit grad. 69. m. 47. complementum scilicet declinationis dati paralleli Geminorum grad. 20. m. 13. Latus minus remanet idem, ac in Tropicis, videlicet grad. 45. Ac proinde Inuentum secundum, & tertium, per tertium casum num. 16. huius praxis inuenientur; sicut in Tropicis; sic

CALCVLVS.

1 G. M. 1 Sinus

33	Altitudo Equinoctialis	145. 0 1	
	Declinatio paralleli Geminorum	120. 13 1	
	Summa; Altitud. Merid. ☉ in ♊, & ♎. Inuentum I.	165. 13 1	90790
	Differentia; Altitud. Merid. ☉ in ♋, & ♏	124. 47 1	41919
	Sinum aggregatum	1	132709
	Aggregati semiffis Inuentum II.	1	66354
	Idem sublatum à I. Inuentum III.	1	24436

Exem-

Altitudin.
rad. M.

63. 25

19. 17

54. 54

14. 44

44. 52

8. 8

34. 20

0. 0

lorum.
tudes.
in oppo-
itudo est
ificium.

Exem-

Sequuntur speciales calculi omnium horarum in

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.
23	96. 36	Logarithmus excessus 906046		
		Logarith. Inuenti secundi generalis *982184	*24436	
		Logarithmus Inuenti quinti 888230	7614	
		Differentia, Sin. Altitudinis horæ 23. II, & Ω	16822	9. 41
		Summa, Sin. Alt. h. 11. II, & Ω, & h. 13. I, & ∞	32050	18. 41
22	81. 36	916460		
		*982184	*24436	
		898644	9700	
		Summa, Sinus Altitudinis horæ 22. II, & Ω	34136	19. 57
		Differ. Sin. Altit. h. 10. II, & Ω, & h. 14. I, & ∞	14736	8. 28
21	66. 36	959895		
		*982184	*24436	
		942079	26331	
		Summa, Sin. Altitudinis horæ 21. II, & Ω	50767	30. 31
		Differen. Sin. Altit. h. 9. II, & Ω, & h. 15. I, & ∞	1895	1. 5
20	51. 36	979319		
		*982184	*24436	
		961503	41234	
		Summa, Sin. Altitudinis horæ 20. II, & Ω	65667	41. 2
		Differentia, Sin. Altitudinis horæ 16. I, & ∞	16795	9. 40
19	36. 36	990462		
		*982184	*24436	
		972646	53263	
		Summa, Sinus Altitudinis horæ 19. II, & Ω	77699	50. 59
		Differentia, Sinus Altitudinis horæ 17. I, & ∞	28827	16. 45
18	21. 36	996838		
		*982184	*24436	
		979022	61681	
		Summa, Sinus Altitudinis horæ 18. II, & Ω	86117	59. 27
		Differentia, Sinus Altitudinis horæ 18. I, & ∞	37245	21. 52

Initio Geminorum, & Leonis; Sagittarij, & Aquarij.

Horæ	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.
17	6. 36	999711 *982184 981895	*24436 65913	
		Summa, Sinus Altitudinis horæ 17. II. & 9	91349	64. 37
		Differentia, Sinus Altitudinis horæ 19. I. & 8	41477	24. 30
16	8. 24	999532 *982184 981716	*24436 65650	
		Summa, Sinus Altitudinis horæ 16. II. & 9	90086	64. 16
		Differentia, Sin. Altitudinis horæ 20. I. & 8	41214	24. 20
15	23. 24	996273 *982184 978457	*24436 60876	
		Summa, Sinus Altitudinis horæ 15. II. & 9	85312	58. 34
		Differentia, Sinus Altitudinis horæ 21. I. & 8	36440	31. 22
14	38. 24	989415 *982184 971599	*24436 52002	
		Summa, Sinus Altitudinis horæ 14. II. & 9	76438	49. 51
		Differentia, Sinus Altitudinis horæ 22. I. & 8	27566	16. 0
13	53. 24	977541 *982184 959725	*24436 39555	
		Summa, Sinus Altitudinis horæ 13. II. & 9	63991	39. 48
		Differentia, Sinus Altitudinis horæ 23. I. & 8	15119	8. 42
12	68. 24	956599 *982184 938783	*24436 24418	
		Summa, Sinus Altitudinis horæ 12. II. & 9	48854	29. 15
		Differentia, Sinus Altitudinis horæ 24. Cyphra	18	0. 0

Excm.

*Exemplum calculi Altitudinum ad horas singulas
Phæbo Æquatorem lustrante.*

Horæ	Distantiæ		[Logarith.] I. secundi.	Altitudin. I. Grad. M.
23	75.	0	Logarithmus secundus Logar. Altit. Æquatoris generalis Summa Altit. hor. 23. & 13. v. m.	941300 *984948 926248 10. 33
22	60.	0	Summa Altit. hor. 22. & 14. v. m.	969897 *984948 954845 20. 42
21	45.	0	Sūma Logar. Altit. h. 21. & 15. v. m.	984942 *984948 969896 30. 0
20	30.	0	Sūma Logar. Altit. h. 20. & 16. v. m.	993753 *984948 978701 37. 46
19	15.	0	Sūma Logar. Altit. h. 19. & 17. v. m.	998494 *984948 983442 43. 5
18			Altitudo horæ 18. semper est Altitudo Æquatoris Re- gionis, velut in præsentī exemplo. grad.	45. 0

*Praxis IX. Data ex antecedenti praxi altitudine Solis, quacumque hora, &
in quoniam parallelo, vmbra illius Gnomonicam, tūm
rectam, tūm versam metiri.*

Quid sit vmbra recta, & versa; quæ Solis altitudinis apparentis, & veræ;
limbi, & centri; & quomodo singulæ inuestigandæ, satis explicauimus
supra in secunda, & nona praxi capitis primi huius lib.

Hic tamen obseruandum est Geometras, qui Gnomonicas Tabulas, earumque
vsum tradunt, non religiose adhibere apparentem altitudinem
limborum Solis, sed veram altitudinem centri Solis; (spretis etiam paral-
laxi, & refractione;) & quidem, hac in re, citra errorem sensibilem.

Data igitur Solis altitudine eius vmbra facillimè patescit ex dictis *Prima
parte, lib. 2. cap. 6. prax. 4. num. 13.* si fiat Analogia; Vt Radius 100000. Ad tan-
gentem complementi altitudinis datæ: Ita Stylus in quocumque partes di-
uisus, ad partes vmbrae quæsitæ.

Nos autem cum Ioanne Paduano Veronensi, in Tabulis Gnomonicis in-

fra

fra sequentibus, supponimus stylum diuisum in partes 12. easque singulas in minuta sexaginta subdiuisas.

Exemplum.

SIt data altitudo Solis existentis in principio Cancrī hora 9. Italica, grad. 3. m. 55. ad latitudinem Poli grad. 45. Quæritur illius vmbra hoc pacto. Vt Radius 100000. Ad complementi altitudinis datæ grad. 3. m. 55. Tangentem 1460592. Ita Stylus partium 12. ad 17527104. quibus diuisis per Radium, (abiectis scilicet figuris quinque postremis) relinquuntur P. 175. pro vmbra quæsita. Deinde multiplicetur numerus abiectus 27104. in 60. & productus 1626240. rursus diuisus per radium dabit minuta 16. Vnde vmbra quæsita euadet. P. 175. m. 16. seu rotunde P. 175. m. 17.

Praxis X. Datis angulo horario, & altitudine Solis, Azimuth eiusdem calculo inuestigare.

DE Azimuthis iuxta communem Astronomorum sensum egimus supra *Episagoge* 3. cap. 3. num. 1. *Primæ partis*. Nunc autem de iisdem dicendum est, vr accipiuntur ab Horographis in Gnomonica. Quo pacto Azimuth definitur, Arcus Horizontis inter Meridianum, aut Verticalem primarium, & Verticalem Solis interceptus; alijs circumferentia nuncupatus. Vt in superiori figura, *praxis* 8. pag. 12. Arcus Horizontis HK, vel KT, est Azimuth, siue circumferentia hor. 2. & 10. Astronomicarum.

Methodus indagandi Azimutha Solis existentis in Æquatore.

VT Radius, ad secantem altitudinis Solis: Ita Sinus anguli horarij, ad Sinum Azimuth quæsiti.

Exemplum. Quærat Azimuth Solis in Æquatore hora 21. sub Altitudine Poli grad. 45. cuius horæ distantia ex superiori *praxi* 8. num. 34. est grad. 45. m. 0. Altitudo verò grad. 30. m. 0. Sic igitur operabimur.

Vt Radius 100000. Ad Altitudinis Solis grad. 30. m. 0. Secantem 115470. Ita Sinus anguli horarij grad. 45. m. 0. 70711. Ad Sinum 81650. cui respondet Azimuth à Meridiano grad. 54. m. 44. cuius complementum grad. 35. m. 16. erit Azimuth numeratum à puncto proximiori Verticalis primarij.

Vel Logarithmicè. Iungantur Logarith. anguli horarij grad. 45. 984948

Et Tomologarithmus Altitudinis Solis grad. 30. m. 0. 6247

Colligitur Logarithmus Azimuth, vt prius grad. 54. m. 44. 991195

*Methodus inueniendi Azimuth Solis in parallelis
extra Aequatorem.*

3 **V**T Sinus complementi altitudinis Solis, ad Sinum Anguli horarij : Ita Sinus complementi declinationis Solis, (siue paralleli dati,) ad Azimuth quaesitum.

Vbi nota. Si angulus horarius quadrantem grad. 90. excedit ; tunc sumendus est Sinus ipsius complementi ad 180. Præterea fac accipias angulum dati paralleli proprium.

4 *Exemplum.* Queratur Azimuth horæ 20. Italicæ, Sole parallelum Cancræ percurrente sub altitudine Poli grad. 45. cuius horæ (ex superiori praxi 8. sub num. 28.) distantia est grad. 55. m. 46. & altitudo grad. 40. m. 18. Vnde sic ordinabitur Analogia.

Vt Sinus complementi altitudinis Solis grad. 40. m. 18. 76267. Ad Sinum anguli horarij, grad. 55. m. 46. 82675. Ita Sinus complementi declinationis Solis in dato parallelo Cancræ grad. 23. m. 30. 91706. Ad 99411. Sinum grad. 83. m. 47. Azimuth Solis numeratum à Meridiano ; cuius complementum grad. 6. m. 13. erit Azimuth eiusdem horæ numeratum à Verticali primario.

Vel Logarithmicè, Iungantur

Logarithmus anguli horarij, siue distantie grad. 55. m. 46. ——— 991738

Logarithmus complementi declinationis Solis grad. 23. m. 30. 996240

Tomologarithmus proprius altitudinis Solis grad. 40. m. 18. ——— 11766

Colligitur, vt prius Logarith. Azimuth à Meridiano gr. 38. m. 47. 999744

Praxis XI. De speciali calculo Altitudinum horarum Astronomicarum, & Inæqualium, siue Antiquarum ; & pro horarijs construendis in regionibus sub Altitudine Poli, maiori grad. 66. m. 30.

1 **H**Actenus exempla dedimus in horis tantum Italicis ; ideo videndum est, in quibus reliqua horarum genera cum illis conueniant, vel disconueniant in calculo.

De Astronomicis.

2 **P**Ro horis Astronomicis, quæ & Gallicæ, Germanicæ, & Hispalicæ dicuntur altitudines parallelorum, & Aequatoris eadem planè Methodo supputantur, quæ de Italicis dictum est. Tria nihilominus sunt illis specialia, & propria.

3 *Primum.* Quod earum distantie vtrinq; à Meridiano per gradus quindenos terminantur, vt supra in praxi 7. num. 2. huius capituli.

4 *Secundum.* Quatuor Altitudines, tres videlicet ipsius horæ duodecimæ

Au-

Australis, nempe vtriusque Tropici, & Aequatoris; & altitudo horæ sextæ semper sunt notæ tantum ex fundamentali calculo trium primorum Inuentorum.

Nam aggregatum ex gradibus altitudinis Aequatoris, & declinationis Solis, est altitudo horæ duodecimæ in principio Cancrī. Eorundem graduum differentia est eiusdem duodecimæ altitudo in principio Capricorni; & altitudo Aequatoris plani, est etiam altitudo horæ duodecimæ in Aequatore.

Altitudo verò horæ sextæ in vtroque parallelo opposito, siue Tropico- rum, siue aliorum, pro quibus calculus instituitur, est semper arcus Inuenti tertij. Veluti sub altitudine Poli grad. 45. Altitudo Horizontalis horæ sextæ in vtroque Tropico- rum est grad. 16. m. 23.

⁵ *Tertium.* Istarum horarum altitudinum supputatio maximè compendio- sa est. Siquidem in parallelis omnibus sufficit alterutrius tantum partis, Orientalis scilicet, aut Occidentalis, altitudines supputare; nam vtrique à Meridiano, quæ horæ distantiam æqualem habent, eadem gaudent altitu- dine. Sed hoc etiam horis antiquis conuenit.

Monitum generale.

⁶ Illud autem hic summo opere animaduertendum, vt cum distantia horaria quadrantem (hoc est gradus 90.) excedit, in omnibus horarum generi- bus, pro calculo Inuenti quinti, accipias Sinum, vel Logarithmum gra- duum excessus supra quadrantem, (quod etiam supra in 8. Praxi admonui- mus;) ac tunc *Inuentum quintum* non addendum, sed subtrahendum *ter- tio*; vt inde *sextum*, & *ultimum* emergat, cui respondent gradus altitudinis quæsitæ. Et hoc quidem necessariò obseruandum est in horis omnibus, vl- tra sextam Astronomicam, & secundam, vel decimam ex Antiquis.

De horis Inæqualibus, siue Antiquis.

⁷ Horæ Antiquæ, seu Inæquales, speciales habent distantias pro singulis omnibus parallelis, ex proprio cuiuslibet arcu Semidiurno excer- pentas, ea Methodo, quam supra praxi 7. num. 7. præcepimus.

⁸ In harum altitudinibus supputandis *Inuenta* fundamentalia, nimirum *se- cundum*, & *tertium* pro vno parallelorum septentrionalium comparata, deseruiunt etiam eidem opposito Australi. At *Inuentum quintum* supputan- dum est pro singulis horis, cum proprijs distantijs cuiuslibet paralleli Sep- tentrionalis seorsim à supputatione *Inuenti quinti* horarum paralleli Au- stralis illi oppositi: & habito *Inuento quinto*, vt *sextum*, & *ultimum* adipisca- ris, in signis Septentrionalibus, *quinto* eidem addendum est *tertium*, & in Au- stralibus subtrahendum.

- 9 Coeterum Aequatoris altitudines eadem sunt in horarijs antiquis, ac in Astronomicis, & Italicis.
- 10 Præterea altitudines omnes horæ sextæ, quæ in horologio antiquo eundem Meridiani locum tenet, quem hora duodecima in Astronomico, eadem pari ratione habentur ex calculo fundamentalis, pro binis singulis parallelis sibi inuicem oppositis, quibus talis calculus deferuit.
- 11 Altitudines tandem Orientales, cum Occidentalibus horarum in eodem parallelo æquidistantes à Meridiano prorsus conueniunt; quod quidem supputationis non parum, velut in Astronomicis, compendium affert.

Exemplum.

- 12 **Q**uæritur altitudo horæ tertiæ Antemeridianæ in Tropico Cancræ, & Capricorni pro horologio antiquo Horizontali, sub altitudine Poli grad. 45.

Calculus fundamentalis est idem, ac ille, qui habetur supra *praxi* 8. num. 22. *huius capituli*, pro Cancro, & Capricorno horarum Italicarum, & Astronomicarum.

Hinc altitudo horæ sextæ in principio Cancræ est grad. 68. m. 30. In principio Capricorni grad. 21. m. 30. In Zodiaco grad. 45. m. 0. sicut in horâ duodecima Astronomica, cum qua & sextâ antiqua prorsus cõcincit.

Inuentum secundum est 64846. eiusdem Logarithmus Generalis, 981180. Inuentum tertium 28196. ut ibidem pro Tropici horarum Italicarum.

Distantia horæ tertiæ antiquæ in Cancro est grad. 57. m. 54. in Capricorno grad. 32. m. 6. Ut habetur supra in *Tabella praxi* 7. num. 7. *huius capituli*.

Quibus præmissis utraq; altitudo horæ tertiæ propositæ seorsim propter diuersam distantiam calculo exaranda est.

Calculus horæ tertiæ antiquæ in Cancro.

13 L ogarithmus Inuenti secundi generalis	981180	Logar.
Logarithmus secundus distant. hor. 3. grad. 57. m. 54.	972542	Sinus.
Logarithmus Sinus Inuenti quinti	953722	34448
Sinus Inuentum tertium addendum		28196
Aggregatum Sinus altitud. horæ 3. quæsita grad. 38. m. 47.		62644

Calculus horæ tertiæ antiquæ Capricorni.

14 L ogarithmo Inuenti secundi generalis	991180	Logar.
Logarithmus secundus distant. grad. 32. m. 6.	992795	Sinus.
Logarithmus Sinus Inuenti quinti	973975	54526
Inuentum tertium subtrahendum		28196
Differentia Sinus altitudinis horæ 3. quæsita grad. 16. m. 30.		26730

Mo-

15 Modo calculus iste illud habet compendij, quod altitudo horæ tertiæ Cancri, est etiam altitudo horæ nonæ Pomeridianæ eiusdem Cancri, & sic altitudo horæ tertiæ Capricorni eadem est, ac altitudo horæ nonæ eiusdem paralleli.

16 Eadem prorsus ratione operandum est in cæteris parallelis, noua pro binis singulis sibi inuicem oppositis Inuenta generalia, prima scilicet, secunda, & tertia instituendo, & reliqua deinceps seorsim peragendo in singulis horis.

17 Sequitur Tabella.

Horæ In- equales.	Altitudines Cancr.				Altitudines Capricorni.			
	Grad.		M.		Grad.		M.	
12	0.		0		0.		0	
11	1	12.	3	56. 14	5.	57	115.	8
10	2	25.	12	25. 30	11.	10	60.	47
9	3	38.	48	14. 55	15.	30	43.	16
8	4	52.	3	9. 20	18.	46	35.	20
7	5	63.	22	6. 1	20.	48	31.	36
6	68.		30		21.		30	

18 Omnisim autem altitudines Solis in Zodiaco, quia istæ in omnibus horarum generibus in eodem plano semper sunt eadem; mutatis tantum horarum denominationibus, ut in Tabella sequenti.

Altitudines	G.	0	10	20	30	37	43	45	43	37	30	20	10	0
	M.	0	33	42	0	46	51	0	5	46	0	42	33	0
Horæ Astronomicæ.		6	1	5	4	3	1	2	1	1	0	9	8	7
Horæ Italicæ.		1	2	1	3	1	4	1	5	1	6	1	7	1
Horæ Babylonice.		1	2	1	1	1	0	9	1	8	7	6	5	4
Horæ Antiquæ.		1	2	1	1	1	0	9	1	8	7	6	5	4

De Altitudinibus supputandis pro horologijs Regionum, quibus Polus eminet supra grad. 66. m. 30.

19 IN Regionibus prædictis Altitudines Solis inuestigantur per præcepta Secundi casus, praxis 8. num. 13. & sequentibus.

20 Hic distantia horarum numerantur à Meridiano, sumendo grad. 15. pro hora 1. ante, & post Meridiem; grad. 30. pro duabus, &c. sicut in Astronomicis, supra prax 7. num. 2.

21 Arcus diurnus minimus est grad. 360. siue horarum 24. ita, ut sub altitudine

is, ac in
quo eun-
nico, ca-
ngulis pa-
in eodem
idem sup-
ancri, &
udine Poli
axi 8. num.
, & Astro-
In princi-
horæ duo-
981180.
m.
Capricor-
pitis. m
orlimpro-
Logar.
Sinus.
34448
28156
62644
Logar.
Sinus.
54926
28190
26730
Mo-

- dine Poli grad. 90. Semestris existat. De quo videatur, quæ diximus supra, praxi 3. num 4. huius capituli.
- 22 Altitudo maxima horæ 12. in principio Cancrī, & aliorum parallelorum, qui Horizontem non secant, est duplex; Australis vna, altera Borealis. Prima conflatur ex altitudine Æquatoris, & declinationis Solis aggregato; vt in exemplo allato supra praxi 8. num. 14. est grad. 41. m. 30. Secunda ex eorundem graduum differentia, quæ ibidem est grad. 5. m. 30.
- 23 Sextæ autem altitudo semper est Arcus Inuenti tertij, vt in citato exemplo grad. 22. m. 17.
- 24 Reliquæ omnes altitudines eodem prorsus modo inveniuntur, ac in horis Astronomicis.

*Easdem Altitudines in regionibus sub latitudine Poli
maiori gradibus 66. m. 30. alia Methodo
expiscari.*

- 25 **L**ogarithmus Secundus distantia à Medio Cœlo, cum Mesologarithmo Secundo declinationis, dabit Mesologarithmum vnus arcus. Deinde Logarithmus declinationis cum residuo Logarithmi Secundi arcus mox inuenti, & Logarithmo Summæ ex ipso, & eleuatione Polari, quando distantia à Medio Cœlo est quadrante minor in parallelo Boreali, & maior in Australi, aut differentia, quando ipsa sit maior quadrante in Boreali, & minor in Australi, dabit Logarithmum Altitudinis Solis horæ diurnæ, aut depressionis horæ nocturnæ proposita.

Exemplum primum.

- 26 **Q**uæritur in loco sub eleuatione Poli grad. 76. Altitudo Solis existentis in principio Cancrī, in distantia horarum duarum, idest, grad. 30. à Medio Cœlo.

CALCVLI FORMA. I G. M. I

Distantia à Medio Cœlo.	I 30. 01	l 21 9937531	I 1960128
Declinatio Borealis maxima.	I 23. 32	m 210361011	l
Arcus.	I 63. 18	l m 110298541	r l 21034745
Eleuatio Polaris.	I 76. 01	l	l
Summa.	I 139. 18	l	l 1981431
Alt. tudo.	I 35. 25	l	l 1976304

Exem-

Exemplum secundum.

²⁷ **Q**uaritur ibidem Depressio Solis existentis in principio Capricorni in distantia horarum septem, idest grad. 105. à Medio Coelo, per calculum sequentem inuenitur grad. 26. m. 25.

CALCVLI RATIO. I G. M. I

Distantia à Medio Coelo.	105. 01 l	21 9413001	1
Declinatio maxima Australis.	23. 32 l m	2110361011	1960128
Arcus.	130. 43 l m	19774011rl	21006565
Elevatio Polaris.	176. 01	1	1
Summa.	1106. 43 l	1	11 1998125
Depressio.	126. 25 l	1	11 1964818

*De reliquis supputationibus Azimuthorum, scilicet
 & umbrarum in omnibus horarum
 generibus.*

²⁸ **P**redictorum calculus idem est in omni horarum genere, ideo nihil est speciale addendum.

*Datis ex precedenti capite Altitudinibus umbris, & Azi-
 muthis Tabulas Gnomonicas construere iuxta Me-
 thodum Ioannis Paduani Veronensis.*

Caput II.

Praxis I. Tabulam Horologij Horizontalis ordinare.

¹ **T**abulas Gnomonicas Paduana Methodo fabricare, nihil est aliud, quam Arcus Azimuthales, siue Horizontales horarum, cum umbris altitudinum respondentium, ita in continuum disponere, ut circuli peripheriam, in gradus 360. diuisam compleant.

² Talis autem peripheria circulum plano Conotomo, seu Gnomonico parallellum repræsentare debet; velut in Horizontalibus horarijs, Horizontem; in Verticalibus, Verticalem plani; in Orientalibus, & Occidentalibus, Meridianum, &c.

3 Sit

nus supra,

parallelo-
era Borea
olis aggre-
o. Secunda

o exemplo

ac in horis

re Poli

ogarithmo

ns.

Secundiar-

one Polari,

o Boreali,

adrante in-

Solis hora

is existentis

grad. 30. à

1960128

121034745

1

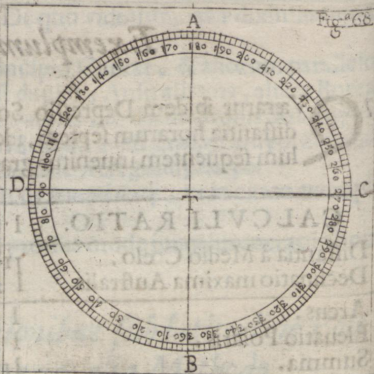
1981431

1976304

Exem-

3 Sit enim, *exempli causa*, peripheria A B C D, in gradus 360. continuos diuisa pro Horologio Horizontali describendo; ea Horizontis planum referet; Diameter A B, Meridianum, siue lineam Styli; A, punctum communis sectionis Meridiani, & Horizontis Australis; B, Borealis. Diameter C D, Verticalem primarium; C, punctum Ortus; D, Occasus.

Hincque planum Semicirculi T A D B, erit pars, in quam cadent omnes horæ matutinae; & semicirculus T A C B, in quem terminantur Vespertinae. T C A D, pars Australis; T C B D, Borealis.



4 Cum autem arcus prædicti Azimuthales supputati sint hinc inde à Meridiano, partim à puncto Australi, A, & partim à Boreali, B; ortum, aut occasum versus, dumtaxat ad quadrantes; (propterea quod Sinuum rectorum, Logarithmorumque operationes 90. graduum numerum non excedant;) vt continuum in circulum graduum 360. numeratum à puncto Boreali, B, per ortum, C, conformetur; opere pretium est scire, qui ad Australes, quæ ad Boreales quartas singulas pertineant. In cuius rei gratiam duo necessariò præmittenda sunt. Et in primis quanam horarum sint matutinae, & quæ vespertinae; Deinde, quæ Boreales, & quæ Australes.

5 Quorum *primum* de facili assequemur ex Tabula distantiarum horariorum. Nam horæ, quarum distantia per subtractionem quindenorum graduum ab Arcu Semidiurno excerpuntur, (*iuxta præceptum praxis 7. cap. 1. huius libri*) omnes sunt vespertinae, seu Pomeridiana; reliquæ vero, quarum distantia per subtractionem ex ipsis gradibus quindecim, & exinde per additionem quindenorum graduum emergunt, Matutinae, seu Antemeridiana; quod etiam ibidem in Tabella horarum ab Ortus, & Occasu adnotauimus. Vbi apparet Matutinas ab Occasu esse hor. 9. 10. 11. 12. 13. 14. 15. & 16. Vespertinas autem 17. 18. 19. 20. 21. 22. & 23.

6 Quoad *secundum* nimirum, quæ horæ sint Australes, quæue Boreales, duplex traditur via.

7 *Prima*, sic. Ex Tabula arcuum Semidiurnorum, quæ habetur supra *præxi 3. capituli 1. huius libri*, accipiat arcus Semidiurnus Capricorni, conueniens altitudini Equatoris supra datum planum, non secus, ac si altitudo Equatoris esset altitudo Poli. Nam horæ omnes, quæ in prædicta distantiarum Tabella, minorem hoc ipso arcu distantiam habent à Meridiano, Boreales erunt; & ex illis matutinae cadent in quartam T D B; & Vespertinae in quartam T C B.

Ex cm.

Exemplum.

8 **P**roponatur construenda Tabula pro Horologio Horizontali sub altitudine Poli grad. 45.

Altitudo Æquatoris supra datum planum Horizōtis est itidem graduum 45. Huic in Tabula arcuum Semidiurnorum supracitata respondet arcus Capricorni grad. 64. m. 14. Qui est distantia Solis à Meridiano vsque ad circulum Verticalem primarium, CD.

Quoniam itaque in citata distantiarum horariorum Tabella, inter horas matutinas hor. 13. 14. 15. & 16. habent distantias à Meridiano minores arcu prædicto grad. 64. m. 14. ideo collocandæ sunt in quarta matutina Boreali, TDB; reliquæ verò 9. 10. 11. & 12. in quarta matutina Australi TAD.

Ex Vespertinis autem, ob eandem rationem hor. 17. 18. 19. & 20. spectant ad quartam Vespertinam Borealem TBC; & reliquæ 21. 22. & 23. ad Vespertinam Australem, TCA.

9 *Secunda Methodus* eiusdem rei investigandæ, hæc esto.

Per 6. *praxim*, capituli primi huius libri, inuenta altitudine Solis in Verticali primario; (quæ in præsentis exemplo inuenietur, vt ibidem grad. 34. m. 20.) expendantur altitudines horarum Cancræ. Et quæcumque hora maioris altitudinis fuerit, quam altitudo Solis in Verticali, ea Borealem partem obtinebit; Matutinam quidem, TDB, si hora sit Antemeridiana, veluti hor. 13. 14. 15. & 16. Vespertinam verò, TCB, si Pomeridiana, sicut hor. 17. 18. 19. & 20. Reliquæ autem eiusdem Tropici Cancræ minoris altitudinis, quam Verticalis, in Australem partem, iuxta propriam earum denominationem, Matutinam scilicet, aut Vespertinam, cadent.

10 Hic tamen diligenter *observandum*, difficultatem hanc distinguendi horas Boreales ab Australibus, tunc solum procedere, cum supra datum planum Gnomonicum Æquinoctialis eleuatur plus gradibus 23. m. 30. & minus gradibus 66. m. 30. Et quidem in illis tantum horis, quæ cadunt prope stylum, quales in Horizontalibus sunt horæ Tropici Cancræ. Nam horæ Æquatoris, ac Tropici Capricorni, citra ambiguitatem, sunt Boreales omnes.

11 Quod si Æquator supra datum planum eleuetur plures gradus, quam 66. m. 30. aut minus gradibus 23. m. 30. tota hæc difficultas euanescit. *Primo* etenim casu omnes horæ Tropici stylo viciniore describuntur in parte Australi. *Secundo* autem casu dimidiæ in parte Australi, & dimidiæ in Septentrionali contingunt.

12 His præmissis Tabulæ diagramma contextitur, cum suis titulis in fronte columnarum, siue laterculorum, vt sequitur.

E

TA-

TABVLA HOROLOGII HORIZONTALIS
Ad latitudinem Poli grad. 45.

H. Italicæ	Tropicus Cancrī		Æquinoctialis		Tropicus Capricorni		H. Babil.
	Arcus		Arcus		Arcus		
	Grad.	M.	Grad.	M.	Grad.	M.	
9	240. 13	175. 17					15
10	250. 12	49. 50					14
11	259. 53	27. 0					13
12	270. 0	17. 45	270. 0	Infinita.			12
13	281. 29	12. 3	280. 44	64. 32			11
14	296. 12	8. 26	292. 14	31. 44			10
15	317. 32	6. 0	305. 16	20. 48			9
16	349. 30	4. 48	320. 46	15. 29	310. 28	144. 40	8
17	25. 44	5. 11	339. 15	12. 50	322. 14	56. 6	7
18	52. 50	6. 58	360. 0	12. 0	335. 17	37. 54	6
19	70. 12	9. 51	20. 45	12. 50	349. 26	31. 35	5
20	83. 47	14. 9	39. 14	15. 29	4. 10	30. 38	4
21	95. 1	21. 5	51. 44	20. 48	18. 40	34. 18	3
22	104. 20	34. 21	67. 46	31. 44	32. 14	45. 40	2
23	114. 7	73. 35	79. 15	64. 32	44. 33	63. 58	1
24	124. 20	Infinita.	90. 0	Infinita.			24

In prima columna à sinistris aspicientis describantur omnes horæ Italicæ, quas datum plenum capit; (iuxta præceptum praxis 7. num. 3. & praxis 8. num. 27. cap. 1. huius libri;) & è regione in extrema columna, à dextris ponantur horæ Babylonica, vt singulæ Babylonica, singulis Italicis ad complementum vique horarum 24. respondeant.

In columnis umbrarum è regione cuiuslibet horæ collocetur umbra, conueniens illius altitudini, in Cancro, in Æquatore, & in Capricorno, si omnes adfint; & si placeat, etiam in reliquis parallelis, vt fecimus nos in Tabula Horologij Horizontalis, quæ habetur infra lib. 2. huius partis.

In calce Tabulæ pro describendis horis Astronomicis, Hispanicis, &c. adijciatur umbra Altitudinis Poli ipsius plani, vt in præfenti grad. 45. cuius umbra est P. 12. m. o.

Tandem in columnis arcuum distribuuntur Azimutha horarum in Cancro, in Æquatore, & in Capricorno, quæ per praxim 10. capitis primi, huius libri, pro Horologio Horizontali ad Altitudinem Poli grad. 45. inuenta sunt, velut in Tabella hic appofita.

13 Qui tamen Arcus azimuthales, cum (sicut in principio huius praxis) admonebamus, non ita sint describendi, ut iacent, sed ita, ut integrum circulum graduum 360. in continuum efficiant; ad hoc peragendum in horis Tropici Cancrī; quatuor obseruandi sunt Canones.

14 Primus. Omnes arcus Azimuthales horarum Matutinarum, siue Antemeridianarum Cancrī, quae distantiam habent à Meridiano maiorem arcu Semidiurno Capricorni inuento cum altitudine Aequatoris (per numerum 7. huius praxis;) aut minorem altitudinem, quam sit altitudo Verticalis (per numerum 9.) erunt arcus in propria columna collocandi, si addantur gradibus 180.

Hors Italica	Cancrī		Aequino- ctialis.		Capricor- ni	
	Azimutha		Azimutha		Azimutha	
9	60.	13				
10	70.	12				
11	79.	53				
12	90.	0	90.	0		
13	78.	31	79.	16		
14	63.	48	67.	46		
15	42.	28	54.	44		
16	10.	30	39.	14	49.	32
17	25.	44	20.	45	37.	46
18	52.	50	0.	0	24.	23
19	70.	12	20.	45	10.	34
20	83.	47	39.	14	4.	10
21	84.	59	54.	44	18.	40
22	75.	40	67.	46	32.	14
23	65.	53	79.	15	44.	33
24	55.	40	0.	0	55.	40

Tales sunt in praesenti exemplo, Azimutha horarum 9. 10. 11. & 12. Si enim, exempli causa, Azimuth hor. 9. quod est grad. 60. m. 13. addatur gradibus 180. fiunt gradus 240. m. 13. Arcus graduum Peripheriae, numeratus ex B, per C; collocandus in columna arcuum Cancrī, è regione hor. 9. & sic de ceteris.

Ratio autem huius additionis grad. 180. patet. Cum enim hora 9. sit matutina Australis, eius Azimuth computatur in quarta TAD, ex A, versus D, grad. 60. m. 13. ut Arcus iste Azimuthalis ingrediatur in ordinem graduum 360. totius peripheriae numerata ex puncto B, per C, addendi sunt ei duo priores quadrantes, nempe BC, & CA, qui simul conficiunt grad. 180. & cum Azimutho horae 9. grad. 240. m. 13. Ex quo manifesta erit ratio, tum additionis; tum subtractionis in reliquis etiam sequentibus regulis.

15 Secundus Canon. Omnes Arcus Azimuthales cuiuscumque horae Antemeridianae Cancrī; quae distantiam à Meridiano habent minorem eodem arcu Semidiurno Capricorni; siue altitudinem maiorem altitudine Solis in Verticali primario; erunt arcus collocandi in propria columna Tabulae Cancrī, si ab integro circulo grad. 360. auferantur.

Tales sunt in dato exemplo hor. 13. 14. 15. & 16. Vnde si Azimuth, exempli gratia, hor. 13. Cancrī, quod est grad. 78. m. 31. de natur gradibus 360. relinquatur Arcus peripheriae eiusdem hor. 13. grad. 281. m. 29.

16 Tertius Canon. Si hora quaecumque Pomeridiana Cancrī distantiam à Meridiano habeat minorem, quam sit arcus Capricorni praedictus; aut altitudinem maiorem altitudine Verticali; arcus illius in columna Cancrī describendus, erit tantum Azimuth.

Tales in hoc exemplo sunt hor. 17. 18. 19. & 20. Ratio est, quia contin-

E 2 gunt

IS

H. Italica	Barb.
15	
14	
13	
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	
1	
24	

re Italica,
is 8. num.
ponantur
ntum vs-
ymbra-
pricornio,
us nos in
tis.
nicis, &c.
. 45. cuius
n in Can-
rimi, huius
inuenta

13 Qui

gunt in quarta peripheria *TBC*, & earum Azimuth numeratur ex *B*, in *C*.
 17 *Quartus Canon*. Si hora quavis Pomeridiana distantiam à Meridiano habeat maiorem distantia predicti arcus Capricorni; aut altitudinem minorem altitudine Verticali, erit arcus illius in continua Circuli peripheria; eiusdem horæ Azimuth, si à gradibus 180. auferatur.

Tales sunt hor. 21. 22. & 23. Quare si Azimuth hor. 21. quod est grad. 84. m. 59. auferatur è gradibus 180. relinquetur arcus illius grad. 95. m. 1.

18 Pro arcibus verò Capricorni, & Equatoris (cum in ijs horæ omnes sint Boreales) vnus datur Canon bipartitus, sic.

In Matutinis, siue Antemeridianis subtrahere Azimuth gradibus 360. & differentia erit arcus quaesitus. In vespertinis, siue Pomeridianis, nihil mutatur, sed Azimuth cum arcu peripheria coincidit.

Exemplum pro Antemeridianis. Azimuth hor. 15. Equatoris est grad. 54. m. 44. ergo subtractum gradibus 360. relinquetur arcum graduum 305. m. 16. & Azimuth hor. 16. Capricorni grad. 49. m. 32. facta subtractione, relinquitur arcum graduum 310. m. 28.

Exemplum in Pomeridianis, patet in hor. 18. 19. 20. 21. 22. & 23. Equatoris, quarum arcus idem est, ac earum Azimuth. Similiter in Capricorno arcus horarum 17. 18. 19. 20. 21. 22. & 23.

Ratio satis elucet ex dictis.

19 Sin autem Aequatoris altitudo maior est gradibus 66. m. 30. (quo casu omnes horæ Tropici stylo vicinioris, ut diximus, sunt Australes;) in horis Caneri Antemeridianis adde Azimuthum gradibus 180. in Pomeridianis subtrahere, & habebis arcum quaesitum.

Pro Aequatore, & Capricorno idem seruetur Canon, qui in superioribus num. 18.

20 Cum denique altitudo Aequatoris minor est grad. 23. m. 30. in eruendis horarum Tropici stylo vicinioris arcibus, quatuor primi seruandi sunt Canones num. 14. 15. 16. 17. Et in alijs parallelis canon bipartitus num. 18.

21 Sic Tabula iam praefinita statim per sequens caput describatur illius Horologii in charta; & si omnia puncta eiusdem horæ in directum concurrant, rectè se habebit; sin minùs, qui irrepsit error, calculo recognito, emendandus est.

Praxis II. Tabulam Horologii Verticalis Meridiem, & Boream directè aspicientis construere.

Hic suppono (ex lib. 2. cap. 7. prax. 1. & 2. Primæ Partis) tanquam nota.
 1 Primum, Planum Verticalè directum, circuli Verticalis primarij superficie vtramque referre; Meridionalem, & Borealem.

2 Secundum. In facie Meridionali Polum eminere, semper oppositum illi, qui eleuatur supra Horizontem, ac totidem quidem gradibus, quot eleuatur Aequator in plano Horizontali: sicut è conuerso, in eadem facie tanta est altitudo Aequatoris, quanta est Altitudo Poli Regionis in plano Horizontis.

tis. In facie autem Boreali Polus idem extollitur, qui in Horizonte; sed totidem gradibus, quot eleuatur oppositus in facie Meridionali.

Hinc ubi Polus Arcticus supra Horizontem attollitur grad. 40. in facie Meridiana plani Verticalis directi eleuatur Antarcticus grad. 50. ac totidem Arcticus in facie Boreali; Æquator verò utrobique grad. 40.

3 Tertiū. In locis sub altitudine Poli grad. 45. idem esse Horologium Horizontale, & Verticale directum; ac proinde Tabulam eandem ibidem locorum planis utrisque deservire; mutatis tantum denominationibus Tropicorum, ut Cancer fiat Capricornus; & hora 24. sit 12. hora 23. sit 13. &c. de quo videatur *secunda praxis cap. 7. citati*; His positis.

4 In reliquis locis omnibus, qui non habent altitudinem Poli grad. 45. supputandi sunt anguli, siue distantie horarie, Altitudines, Umbra, & Azimutha propria, ut in sequentibus paragraphis. Ad quorum maiorem euidenciam proponatur construenda Tabula pro Horologio Verticali directo in loco, ubi eleuatur Polus Horizontalis grad. 40. ut supra in exemplo allato num. 2.

De Angulis, siue Distantijs horarijs.

5 AD Altitudinem Poli Horizontalis grad. 40. (non muralis grad. 50.) ex tabula Arcuum Semidiurnorum, quæ habetur *supra cap. 1. prax. 3. huius libri*, accipitur arcus Semidiurnus Cancræ grad. 111. m. 24. pro distantia hor. 12. Capricorni; & subductis grad. 15. pro distantia hor. 13. idem Capricorni, & sic deinceps per subtractionem, & additionem quindenorum graduum, ut in *capite primo, prax. 7. huius libri*, donec non excedunt arcum Semidiurnum Cancræ sumptum ad altitudinem Poli Muralis grad. 50. qui arcus, est grad. 121. m. 15.

6 Dixi, Distantias eiusmodi, etsi desumptas ex Arcu Semidiurno Cancræ, esse Distantias horarum Tropici Capricorni, quia in superficiebus Verticalibus directè Meridiem aspicientibus, ubi eleuatur Polus Antarcticus; Sol tunc umbra Gnomonis Tropici stylo viciniorem describit, cum in Tropico Capricorni versatur; & è conuerso, cum Tropici Cancræ percurrit, Capricorni parallelum delineat. Quæ etiam de causa in Tabulæ huius diagrammate mutantur tituli columnarum, Arcuum, & Umbrarum, ut mox patebit.

7 Dixi, Arcum totum Semidiurnum Cancræ, accipiendum pro hora 12. ac deinceps pro 13. 14. 15. &c. non pro 24. 23. &c. ut in Horizontalibus, quia in hoc Horologio pars, quæ in Horizontali fuisset Occidentalis, fit Orientalis, & consequenter horæ Vespertinæ fiunt Matutinæ; ut apparet in Tabella.

8 Idem anguli, siue distantie à Meridiano Capricorni deseruiunt etiam horis in Cancro, seruata horarum correspondentia in secunda columna Tabellæ posita; ita, ut eadem sit distantia horæ 16. Capricorni, & horæ 20. Can-

cri;

cri; sic horæ 17. Capricorni, & horæ 19. Canceri, &c. ex quibus tamen distantijs Capricorni illæ tantum habent respondētem horam Canceri in facie

Australi, quæ non excedunt arcum Semi-diurnum Capricorni ad altitudinem Poli Muralis grad. 50. qui est grad. 58. m. 45. quales sunt horæ 13. 14. 15. 16. 17. 18. 19. & 20. reliquæ verò ad faciem *Borealem* spectant; iuxta numerorum dispositionem quartæ columnæ, cuius titulus est, *Hora Boreales*.

9 Pro horis *Æquinoctialis* distantia horæ 12. erit grad. 90. distantia horæ 13. grad. 75. &c. ut in sexto Tabellæ laterculo, cuius titulus est, *Distantiæ in Aequatore*.

Distantiæ horariæ pro Verticali directo
in locis sub Altitudine Poli
grad. 40.

<i>Hora Australis Capricorni.</i>	<i>Hora correctæ Capricorni.</i>	<i>Arcus diurnus Canceri ad Altitudinem grad. 40.</i>	<i>Hora Boreales.</i>	<i>Distantiæ in Aequatore.</i>	<i>Hora Baby-lonica.</i>
12		111. 24	12	90	12
13		96. 24	11	75	11
14		81. 24	10	60	10
15		66. 24	9	45	9
16	20	51. 24	8	30	8
17	19	36. 24	7	15	7
18	18	21. 24	6	0	6
19	17	6. 24	5	15	5
20	16	8. 36	4	30	4
21	15	23. 36	3	45	3
22	14	38. 36	2	60	2
23	13	53. 36	1	75	1
24		68. 36	24	90	0
25		83. 36	23		1
26		98. 36	22		2
27		113. 36	21		3

De calculo Generali trium priorum inuentorum
pro Altitudinibus.

10 **A**ddantur simul trianguli horarij crus minus (quod est complementum Altitudinis Poli, idest Altitudo *Æquatoris* in Plano dato; ut in præfati exemplo grad. 40.) & crus maius grad. 66. m. 30. nec non ex summa collecta pensetur ad quem ex tribus casibus *capitis primi*, *praxis 8. huius libri*, calculus pertineat; quæ modò cum sit grad. 106. m. 30. nempe quadrante maior, calculus spectabit ad tertium casum; in quo sic proceditur.

CAL.

CALCVLI FORMA.

I G. M. I Sinus

Crus minus, Altitudo Æquatoris in muro I 40. 0 I
Compl. Cruris maioris, Solis maxima declinatio I 23. 30 I

Aggregatum, cuius Sinus, est *Inuentum I.* I 63. 30 I 89493

Differentia eorumdem Crurum I 16. 30 I 28401

Sinum aggregatum I I 117894

Aggregati Semissis, *Inuentum II.* I I 58947

Idem *Secundum Inuent.* sublatum à *I. Inuentum III.* I I 30546

II Modo accipiat *Logarithmus Inuenti secundi 977043*. Generalis. Quibus præmissis, (*per numerum 16. & sequentes praxi 7. capitis primi*,) supputentur Altitudines Tropici utriusque, & Æquatoris; applicando horis Capricorni, quæ ibi diximus de Cancro, & è conuerso. Ac dignissimum animaduersione notetur Compendium, quod habetur *ibidem num. 26*. Tum etiam fore non parum facilitatis, & breuitatis non iniocundæ, si querantur simul Altitudines, & Azimutha, disponendo calculos altitudinum super folio papyri in sinistra operantis, & in dextra aduersa calculos Azimuthorum. Nam eodem actu, quo in Tabulis Sinuum, & Logarithmorum inuenitur *Logarithmus Secundus anguli horarij pro altitudine*, exscribi poterit è regione *Logarithmus primus pro Azimutho*: & inuenta in iisdem Tabulis altitudine, Sinui respondente, statim eiusdem Tomologarithmus ex aduersum notari; quibus cum *Logarithmo generali*, Complementi declinationis Solis grad. 23. m. 30. -- 996247. collectis, emerget *Logarithmus Azimuthi illius horæ*, cuius inuenta est Altitudo. Idem enim *Logarithmus anguli*, duobus Azimuthis, duarum scilicet horarum sibi inuicem respondentium, deseruit. Tomologarithmus verò semper assumitur Altitudinis proprius.

Spe-

recto

Hora
Baby-
lonica.

12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3

complemen-
tato; ut in
ex summa
huius libri
quadrante
r.

CAL.

12 Speciales calculi Altitudinum, & Vmbrarum, & S. S.

Hora	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P. M.	Vmbræ P. M.
12. & 24. 70	111. 24	Logarith. excessus gr. 21. m. 24. 956215 Logar. Inu. secundi Generalis *977043 Logarithmus Inuenti quinti 933258	*30546 21502		
		Differentia, Sin. Altitudinis horæ 12. 70	9044	5. 11	132. 17
		Summa, Sinus Altitudinis horæ 24. 70	52048	31. 22	19. 42
13. & 25	96. 24	Logarit. excessus grad. 6. m. 24. 904715 Logarithmus Generalis *977043 881758	*30546 6569		
		Differentia, Sinus Altitud. horæ 13. 70	23977	13. 52	48. 37
		Summa, Sinus Altitudinis horæ 25. 70	37115	21. 47	30. 2
14. & 26	81. 24	Logarithmus secundus 917474 Logar. Inu. secundi Generalis *977043 894517	*30546 8802		
		Summa, Sinus Altitudinis horæ 14. 70	39348	23. 10	28. 3
		Differentia, Sinus Altitud. horæ 26. 70	21744	12. 33	53. 54
15. & 27	66. 24	Logarithmus secundus 960244 Logar. Inu. secundi Generalis *977043 937287	*30546 23599		
		Summa, Sinus Altitudinis horæ 15. 70	54145	32. 47	18. 38
		Differentia, Sin. Altitudinis horæ 27. 70	6947	3. 59	172. 21
16. & 20	51. 24	Logarithmus secundus 979510 *977043 956553	*30546 36785		
		Summa, Sinus Altitudinis horæ 16. 70	67331	42. 19	13. 31
		Differentia, Sinus Altitudinis horæ 20. 25	6239	3. 34	192. 33

Se-

Calculus Azimuthorum utriusque Tropici.

	Logarith. & Tomologar.
Logarithmus complementi anguli gr. 11. m. 24. ad 180.	996897
Logarithmus complementi declinationis Solis gr. 23. m. 30. Generalis	*996240
Tomologarithmus Altitudinis horæ 12. grad. 5. m. 11.	178
Azimuth horæ 12. Capricorni grad. 59. m. 1. Arcus grad. 120. m. 59.	998315
Tomologarithmus Altitudinis horæ 24. grad. 31. m. 22.	6862
Azimuth horæ 24. Capricorni grad. 90. cuius Arcus est grad. 270. m. 0.	999999
Logarithmus complementi anguli ad 180. grad. 96. m. 24.	999728
Logarithmus complementi declinationis Solis, Generalis	*996240
Tomologarithmus Altitudinis grad. 13. m. 52. horæ 13.	1284
Azimuth horæ 13. 70. grad. 69. m. 50. Arcus 110. m. 10.	997252
Tomologarithmus Altitudinis horæ 25. grad. 21. m. 47.	3217
Azimuth horæ 25. 70. grad. 78. m. 56. Arcus 258. m. 56.	999185
Logarithmus primus anguli grad. 81. m. 24.	999509
Logarithmus complementi declinationis Solis, Generalis	*996240
Tomologarithmus Altitudinis grad. 23. m. 10. horæ 14.	3651
Azimuth horæ 14. 70. grad. 80. m. 50. Arcus 99. m. 30.	999400
Tomologarithmus Altitudinis grad. 12. m. 33. horæ 26.	1050
Azimuth horæ 26. 70. grad. 68. m. 16. Arcus grad. 248. m. 16.	996799
Logarithmus primus anguli	996207
Logarithmus declinationis Solis complementi, Generalis	*996240
Tomologarithmus Altitudinis grad. 32. m. 47. horæ 15.	7535
Azimuth horæ 15. eiusdem grad. 88. m. 23. Arcus idem	999982
Tomologarithmus horæ 27. Altitudinis grad. 3. m. 59.	105
Azimuth horæ 27. grad. 57. m. 24. Arcus 237. m. 24.	992552
Logarithmus primus anguli	989294
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 42. m. 19. horæ 16. 70.	13110
Azimuth horæ eiusdem grad. 75. m. 45. Arcus idem	998644
Tomologarithmus Altitudinis grad. 3. m. 34. horæ 20. 50.	84
Azimuth horæ eiusdem grad. 45. m. 54. Arcus grad. 514. m. 6.	985618

F

Se.

Sequuntur calculi Altitudinum, & Vmbrarum २, ३ २.

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P.	Vmbræ M.
17	36. 24	Logarithmus secundus 990.44 *977043 967617	*30546 47434		
		Summa, Sinus Altitudinis horæ 17. ७	77980	51. 14	9. 38
		Differentia, Sin. Altitudinis horæ 19. 22	16888	9. 43	70. 5
18	21. 24	Logarithmus secundus 996898 *977043 973941	*30546 54878		
		Summa, Sinus Altitudinis horæ 18. ७	85424	58. 40	7. 18
		Differentia, Sin. Altitudinis horæ 18. 25	24332	14. 5	47. 57
19	6. 24	Logarithmus secundus 999728 *977043 976771	*30546 58566		
		Summa, Sinus Altitudinis horæ 19. ७	89112	63. 1	6. 7
		Differentia, Sinus Altitudinis horæ 17. 25	28020	16. 16	41. 8
20	8. 36	Logarithmus secundus 999509 Logar. Inu. secundi Generalis *977043 976552	*30546 58283		
		Summa, Sinus Altitudinis horæ 20. ७	88829	62. 29	62. 39
		Differentia, Sin. Altitudinis horæ 16. 25	27737	16. 6	41. 35
21	23. 36	Logarithmus secundus 996207 *977043 973250	*30546 54024		
		Summa, Sinus Altitudinis horæ 21. ७	84570	57. 45	7. 34
		Differentia, Sinus Altitudinis horæ 15. 25	23478	13. 35	49. 40

Se-

Sequitur calculus Azimuthorum utriusque Tropici.

	Logarith. & Tomologar.
Logarithmus primus anguli	977336
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 51. m. 14. horæ 17. 70	20332
Azimuth horæ eiusdem grad. 60. m. 22. Arcus idem	993908
Tomologarithmus grad. 9. m. 43. horæ 17. 25	627
Azimuth horæ eiusdem grad. 33. m. 31. Arcus 326. m. 29.	974203
Logarithmus primus anguli	956215
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 58. m. 40. horæ 18. 70	28398
Azimuth horæ eiusdem grad. 40. m. 3. Arcus idem	980853
Tomologarithmus Altitudinis grad. 14. m. 5. Arcus 18. 25	1225
Azimuth eiusdem grad. 20. m. 11. Arcus grad. 339. m. 49.	953780
Logarithmus primus anguli	904715
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 63. m. 1. horæ 19. 70	34320
Azimuth horæ eiusdem grad. 13. m. 1. Arcus idem	935275
Tomologarithmus Altitudinis grad. 16. m. 16. horæ 17. 25	1774
Azimuth horæ eiusdem grad. 66. Arcus grad. 353. m. 54.	902729
Logarithmus primus anguli	917474
Logarithmus Generalis complementi declinationis Solis	*996240
Tomologarithmus Altitudinis grad. 62. m. 39. horæ 20. 70	33778
Azimuth horæ eiusdem grad. 17. m. 22. Arcus grad. 342. m. 38.	947492
Tomologarithmus Altitudinis grad. 16. m. 6. horæ 16. 25	1738
Azimuth horæ eiusdem grad. 8. m. 12. Arcus idem	915452
Logarithmus primus anguli	960244
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 57. m. 45. horæ 21. 70	27277
Azimuth horæ eiusdem grad. 43. m. 28. Arcus grad. 16. m. 32.	983761
Tomologarithmus Altitudinis grad. 13. m. 35. horæ 15. 25	1232
Azimuth horæ eiusdem grad. 22. m. 11. Arcus idem	957716

Sequuntur calculi Altitudinum, & Vmbrarum, &c.

Horæ	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P.	Vmbræ M.
22	38. 36	Logarithmus secundus 989294 Logar. Inu. secundi Generalis *977043 Logarithmus Inuenti quinti 966337	*30546 46071		
		Summa, Sinus Altitudinis horæ 22. 36	76617	50. 1	10. 4
		Differentia, Sin. Altitudinis horæ 14. 00	15525	8. 56	76. 20
23	53. 36	Logarithmus secundus 977336 *977043 954379	*30546 34566		
		Summa, Sinus Altitudinis horæ 23. 36	65512	40. 55	13. 53
		Differentia, Sin. Altitudinis horæ 13. 00	4420	2. 32	271. 14

Calculus Altitudinum Solis in Aequatore.

Horæ	Distantia Grad.	Logarithmi secundi	Altitud. Gr. M. P.	Vmbræ M.
12	90	Altitudo Aequatoris Muri	0. 0	Infinita
13	75	Logarithmus secundus anguli 941300 Log. Altit. Aequat. Mural. gr. 40. Gener. *980807		
		Summa, Log. Altit. hor. 13. & 23. V. & 21	9. 35	71. 4
14	60	Logarithmus secundus 969897 *980807		
		Summa, Log. Altit. hor. 14. & 22. V. & 21	18. 45	35. 21
15	45	Logarithmus secundus 984948 *980807		
		Summa, Log. Altit. hor. 15. & 21. V. & 21	27. 2	21. 31
16	30	Logarithmus secundus 993753 *980807		
		Summa, Log. Altit. hor. 16. & 20. V. & 21	33. 49	17. 55
17	15	Logarithmus secundus 998494 *980807		
		Summa, Log. Altit. hor. 17. & 19. V. & 21	38. 23	15. 9
18	0	Altitudo Aequatoris Muralis	40. 0	14. 18

De

Sequitur calculus Azimuthorum utriusque Tropici.

Vmbra P. M.		Logarith. & Tomologar.
	Logarithmus primus anguli	979510
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis grad. 50. m. 1. hora 22. 70	19193
10. 4	Azimuth horæ eiusdem grad. 62. m. 51. Arcus grad. 297. m. 2.	994943
76. 20	Tomologarithmus Altitudinis grad. 8. m. 56. hora 14. 25	530
	Azimuth horæ eiusdem grad. 35. m. 23. Arcus idem	976280
	Logarithmus primus anguli	990574
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis grad. 40. m. 55. hora 23. 70	12167
13. 13	Azimuth horæ eiusdem grad. 77. m. 18. Arcus grad. 282. m. 22.	998981
271. 14	Tomologarithmus Altitudinis grad. 2. m. 32. hora 13. 25	42
	Azimuth horæ eiusdem grad. 47. m. 38. Arcus idem	986856

Calculus Azimuthorum Solis in Aequatore.

Vmbra P. M.		Logar. primi & Tomolog
Infinita	Azimuth grad. 90. Arcus idem	
	Logarithmus primus anguli	998494
	Tomologarithmus Altitudinis grad. 9. m. 15.	610
71. 4	Azimuth gr. 78. m. 24. Arcus horæ 13. idem. Arcus horæ 21. gr. 281. m. 36.	999104
	Logarithmus primus anguli	993753
	Tomologarithmus Altitudinis grad. 18. m. 45.	2168
35. 24	Azimuth gr. 66. m. 9. Arcus horæ 14. idem. Arcus horæ 22. gr. 293. m. 51.	996121
	Logarithmus primus anguli	984948
	Tomologarithmus Altitudinis grad. 27. m. 2.	5025
21. 31	Azimuth gr. 52. m. 3. Arcus horæ 15. idem. Arcus horæ 21. gr. 307. m. 27.	989773
	Logarithmus primus anguli	969897
	Tomologarithmus Altitudinis grad. 13. m. 49.	8049
17. 55	Azimuth gr. 37. m. 0. Arcus horæ 16. idem. Arcus horæ 20. gr. 323. m. 0.	977946
	Logarithmus primus anguli	941300
	Tomologarithmus Altitudinis grad. 38. m. 23.	10575
15. 9	Azimuth gr. 19. m. 17. Arcus horæ 17. idem. Arcus horæ 19. gr. 340. m. 43.	951875
14. 18	Azimuth horæ 18. Arietis, & Libræ, grad. 0. m. 0. Arcus 0. m. 0.	

De

De Vmbris in Plano Verticali.

14 **V** Mbræ in hoc plano, præter ea, quæ diximus capite primo, praxi 9. nihil addunt obscuritatis explicandum.

De reductione Azimuthorum in Arcus locandos in Tabula Horologij Verticalis.

15 **D** Escripito Tabulæ Diagrammate, vt in superiori praxi, cum numeris horarum Australium, Capricorni in primo laterculo à sinistris aspi-
cientis, & Boreali in extrema à dextris; tum proprijs titulis, & vmbreis: vt Azimutha reducantur ad Arcus, qui perpetuam continent peripheriam graduum 360. coepta numeratione ex B, per C, primum hic nos imaginari oportet circuli peripheriam, quam supra descripsimus in principio huius capituli, ita in facie Australi parietis locatam, vt punctum A, Zenith, & punctum B, Nadir; D, Orientem, & C, Occasum adamussim respiciant; in facie verò Boreali omnino è conuerso.

16 Deinde videndum ex Tabella distantiarum supra num. 6 & 7. quæ sint horæ Matutinæ, seu Antemeridiana, & quæ Vespertinæ, seu Pomeridiana.

17 Tum ad altitudinem Æquatoris in muro, grad. 40. accipiat arcus Semidiurnus Capricorni grad. 68. m. 36. expendendo per Tabellam distantiarum horas Capricorni distantie minoris hoc Arcu; & quidem inter Matutinas inuenientur horæ 15. 16. 17. 18. & 19. inter Vespertinas autem horæ 20. 21. 22. & 23.

18 His peractis. Pro horis Matutinis distantie maioris gradibus 68. m. 36. Azimuth auferatur à gradibus 180. & relinquetur Arcus describendus in Tabula. Tales sunt horæ 12. 13. & 14.

19 Pro horis Matutinis distantie minoris, quales sunt prædictæ 15. 16. 17. 18. & 19. describe Azimutha, vt iacent.

20 Pro horis Vespertinis distantie minoris gradibus 68. m. 36. veluti sunt iam dictæ 20. 21. 22. & 23. Azimutha subtrahantur gradibus 360.

21 Pro reliquis autem maiori distantie, quales sunt horæ 24. 25. 26. & 27. addantur Azimutha gradibus 180.

22 Pro arcibus Cancræ, & Æquatoris horarum Matutinarum ipsa notentur Azimutha, & in Vespertinis subtrahantur gradibus 360.

23 Tandem in calce Tabulæ seorsim adscribatur umbra Altitudinis Poli Muralis grad. 50. quæ est P. 10. m. 4. & erit omnibus numeris Tabula completa.

TA-

TABVLA HOROLOGII VERTICALIS

Directi ad latitudinem Poli grad. 40.

Horæ Austra- les.	Tropicus Capricorni				Equinoctialis				Tropicus Cancrī				Horæ Borea- les.
	Arcus		Vmbra		Arcus		Vmbra		Arcus		Vmbra		
	Grad.	M.	P.	M.	Grad.	M.	P.	M.	Grad.	M.	P.	M.	
12	120.	59		132.	17		90.	0	Infinita.				12
13	110.	10		48.	37		78.	24	71.	4	47.	38	11
14	99.	30		28.	3		66.	9	35.	21	35.	23	10
15	88.	23		18.	38		52.	33	23.	31	22.	11	9
16	75.	45		13.	11		37.	0	17.	55	8.	12	8
17	60.	22		9.	38		19.	17	15.	9	353.	54	7
18	40.	3		7.	18		0.	0	14.	18	339.	49	6
19	13.	1		6.	7		340.	43	15.	9	326.	29	5
20	342.	38		6.	12		323.	0	17.	55	314.	6	4
21	316.	32		7.	34		307.	27	23.	31			3
22	297.	7		10.	4		293.	51	35.	21			2
23	282.	22		13.	53		281.	36	71.	4			1
24	270.	0		19.	42								24
25	258.	56		30.	2						Diff. Poli		24
26	248.	16		53.	54						P. M.		23
27	237.	24		172.	21						10.	4	21

Praxis III. Tabulas pro Horologijs declinantibus à Meridiano construere.

De Prasupponendis.

- 1 **S**uppono primò (ex lib. 2. cap. 2. & 11. primæ partis) Horologium declinans illud esse, quod inscribitur planis ad Horizontem quidem rectis, sed à Meridiano declinantibus.
- 2 **S**ecundò, illud esse duplex in genere, scilicet *Meridionale*, & *Boreale*; at in specie quadruplex. Nimirum Meridionale declinans ab Austro, ad Ortum; & Meridionale declinans ab Austro, ad Occasum: Item Boreale ab Aquilone, ad Ortum; & ab Aquilone, ad Occasum.
- 3 **T**ertio. Quatuor istis diuersis Horologijs, sub eadem altitudine Poli, & ad eandem muri declinationem, siue ab Austro, siue ab Aquilone, duas tantum sufficere Tabulas, quæ vnico fundamentali calculo supputantur. Tabula namque Horologij declinantis ab Austro, ad Ortum, continet etiam declinans ab Aquilone, similiter ad Ortum. Et Tabula declinantis ab Austro, ad Occasum, declinans itidem ad Occasum, ab Aquilone, iisdem gradibus. Vide num. 5. cap. 11. lib. 2. primæ partis.

4 *Quarto*. In quacumque muri declinatione prædictis quatuor Horologijs supputandis tria prærequiruntur inuenta; scilicet, Altitudo Poli supra planum; quantitas Anguli inclinationis styli, siue lineæ substylaris à Meridiana; & quantitas Anguli inclinationis Meridianorum. Quorum inuestigationem docuimus supra lib. 2. cap. 11. prax. 5. num. 9. 10. & 11. *Primæ partis.*

Exemplum.

5 *Proponatur constructio Tabulæ Horologii declinantis grad. 54. sub altitudine Poli Regionis grad. 45. colligentur tria illa inuenta, ut ibidem, sic.*

Altitudo Poli supra planum	grad. 24. m. 34.
Cuius complementum erit Altitudo Equatoris	grad. 65. m. 26.
Inclinatio styli	grad. 38. m. 58.
Inclinatio Meridianorum	grad. 62. m. 49.

Altitudo enim Poli supra planum, ut habeatur, erit Analogia.

VT Radius 100000. ad grad. 54. complementi declinationis muri Sinum 58778. ita 70711. Sinus complementi Altitudinis Poli Regionis grad. 45. ad 41563. Sinum Altitudinis Poli grad. 24. m. 34. supra datum planum declinans grad. 54.

Vel Logarithmicè, iungantur complementi declinationis muri grad. 54. Logarithmus 976922
Logarithmus complementi Altitudinis Poli Regionis grad. 45. in præfenti exemplo 984949
Colligitur Logarithmus Anguli grad. 24. m. 34. Altitudinis Poli supra Planum 991871

Pro inclinatione Styli, fiet Analogismus.

VT Radius 100000. ad 80902. Sinum declinationis muri grad. 54. ita 100000. tangens latitudinis Equinoctialis grad. 45. ad 80902. tangentem anguli inclinationis styli, siue distantie lineæ substylaris à Meridiana grad. 38. m. 58.

Vel iungantur grad. 54. declinationis muri Logarithmus 990796
Mesologarithmus grad. 45. m. 0. complementi Altitudinis Poli Regionis in præfenti 100000
Fiet Mesologarithmus grad. 38. m. 58. Anguli eiusdem 990796

Angu-

Angulus tandem inclinationis Meridianorum, hac innotescet Analogia.

VT Radius 100000. ad 70711. Sinus Altitudinis Poli grad. 45. m. o. Regionis; ita 72654. tangens Anguli complementi declinationis muri grad. 54. m. o. ad 1374. tangentem complementi Anguli quæsit gr. 62. m. 48. *Vel*, iunctis Mesologarit. gr. 54. complementi declinationis muri 986126 Logarithmo grad. 45. m. o. Altitudinis Poli 984949 Colligitur Mesologarithmus complem. grad. 62. m. 48. vt prius 971075 His præmissis, inueniantur Anguli Horarij, Altitudines Solis, Azimutha, & Vmbræ, velut in sequentibus paragraphis.

De Angulis, siue Distantijs Horarijs.

AD Altitudinem Poli Regionis (in præsentis exemplo grad. 45.) inuentis (ex cap. 1. prax. 3. huius libri) Arcubus Semidiurnis Capricorni, grad. 64. m. 14. Equatoris grad. 90. & Cancrj, grad. 115. m. 46. Addatur singulis Inuentum tertium, grad. 62. m. 49. & vnumquodque aggregatum, erit distantia, siue Angulus Horarij hor. 24. subtractisque grad. 15. relinquetur distantia hor. 23. &c. vt in 7. prax. cap. 1. huius libri; ac in Tabella sequenti.

Hora Capricorni Orientalis	Arcus Semidiurnus Capricorni.	Hora Cæleri Occidentales.	Hora Orientales.	Arcus Semidiurnus Arietis, & Libræ.	Hora Occidentales.	Hora Orientales.	Arcus Semidiurnus Canceri.	Hora Occidentales.
	64. 14 62. 49		90. 0 62. 49				115. 46 62. 49	
24	127. 3		152. 49				178. 35	
23	112. 3		137. 49				163. 35	
	C-----D		122. 49				148. 35	
22	97. 3		107. 49				133. 35	
21	82. 3		92. 49				118. 35	
20	67. 3	16	C-----D				103. 35	
19	52. 3	17	77. 49	17			88. 35	
18	37. 3	18	62. 49	18			C-----D	
17	22. 3	19	47. 49	19	17	73. 35	19	
16	7. 3	20	32. 49	20	16	58. 35	20	
	A-----B		15. 49	21	15	43. 35	21	
15	7. 57	21	14. 49	22	14	28. 35	22	
14	21. 57	22	A-----B			13. 35	23	
13	37. 57	23	13. 11	23		A-----B		
12	52. 57	24	12. 11	24	12	1. 25	24	
11	67. 57	25	11. 11	25	11	16. 25	25	
10	82. 57		10. 11	26	10	31. 25	26	
9	97. 57		9. 11	27	9	46. 25	27	
	C-----D		8. 11	28	8	61. 25	28	
8	112. 57	8	87. 11		7	76. 25	29	

G

Cum

Cum autem grad. 15. subtrahi nequeunt, ducatur linea, A B, quæ horas post transitum styli, ab illis, quæ sunt ante ipsum, distinguet.

Tum distantia horarum superuacaneæ excludantur linea, C D, supra, & infra lineam A B. Ita, ut distantia Capricorni non excedat arcum Semidiurnum Cancræ, respondentem Altitudini Poli Muralis grad. 24. m. 34. qui Arcus ex Tabula, quæ habetur supra cap. 1. prax. 3. est grad. 101. m. 28.

Distantia verò Equatoris grad. 90. nunquam superent.

Distantia Cancræ terminetur Arcu Semidiurno Capricorni, similiter Altitudini Poli Muralis grad. 24. m. 34. respondente; qui est grad. 78. m. 32.

8 Si quis autem cupiat horas tantum pro muro declinante ad Occasum, arcus Semidiurnis subtrahendum est *Inuentum tertium*; & reliqua peragenda, veluti pro declinante ad Ortum.

9 Idem Anguli, siue distantia horarum pro horis Italicis, deferuiunt etiam Babylonis, si horæ Italicæ mutantur in sua complementa ad numerum 24. *Exempli causa*, Hora 23. Italica mutanda est in 1. Babylonicam; 22. Italica in 2. Babylonicam, &c.

10 Pro horis *Astronomicis*, siue Hispanis, Gallicis, &c. distantia horæ 12. semper est *Inuentum tertium* (in præsentis exemplo grad. 62. m. 48.) alia ex vna parte formantur continua additione quindenorum graduum, donec summa non excedit Arcum Semidiurnum Cancræ ad Altitudinem Poli Muralis (in præsentis exemplo grad. 24. m. 34.) qui Arcus est grad. 101. m. 28. Ex altera verò parte formantur quindenorum graduum subtractione, donec fieri potest; & cum amplius quindenis subtrahi nequeunt, pro sequentibus horis fiat quindenorum additio, quoad arcum prædictum Cancræ summa non excedit. Istæ distantia deferuiunt Capricorno, Cancro, & Equatori.

11 In *Antiquis* horarijs *Inuentum tertium* supradictum grad. 62. m. 48. est distantia horæ 6. reliquæ verò distantia componuntur sicut Astronomicæ, additione scilicet, ac subtractione; non tamen quindenorum, sed distantia vnius horæ inæqualis inuenta, ut supra cap. 1. prax. 7. num. 7. quæ pro Capricorno est grad. 19. m. 18. & pro Cancro grad. 10. m. 42. pro Equatore autem non differunt à distantijs Equinoctialis in Astronomicis.

Distantia Horarum Astronomicarum pro Declinante grad. 54. sub Altitudine Poligrad. 45.

	Post transitum Styli.	Hore ab Austro ad Ortum, & ab Aquilone ad Occasum.	Hore			Hore ab Austro ad Occasum, & ab Aquilone ad Ortum.
			Grad.	M		
Ante transitum Styli.	Hore ab Austro ad Ortum, & ab Aquilone ad Occasum.	2	92.	49	10	
		1	77.	49	11	
		12	62.	49	12	
		11	47.	49	1	
		10	32.	49	2	
		9	17.	49	3	
		8	2.	49	4	
			A	B		
		7	12.	11	5	
		6	27.	11	6	
		5	42.	11	7	
		4	57.	11	8	
		3	72.	11	9	
		2	82.	11	10	
		1	97.	11	11	

De Calculo Altitudinum in Communi.

¹² **Q**uoniam latera trianguli horarij, scilicet latus maius, quod in præsen-
ti est complementum declinationis Solis grad. 66. m. 30. & latus mi-
nus grad. 65. m. 26. quod est Altitudo Æquatoris supra planum decli-
nans, simul iuncta sunt quadrante maiora, nempe grad. 135. m. 56. ideo per
Tertium casum cap. 1. prax. 8. huius libri; ita calculus trium priorum funda-
mentalium Inuentorum disponitur.

	I G.	M. I	Sinus
Crus minus, Altitudo Æquatoris muralis	I 65.	26 I	
Compl. Cruris maioris, declinatio Tropicorum	I 23.	30 I	
Aggregatum, cuius Sinus, est Inuentum I.	I 88.	56 I	99983
Differentia	I 41.	56 I	66826
Sinum aggregatum	I		166809
Aggregati Semifis, Inuentum II.	I		83404
Idem sublatum ab Inuento I. Inuentum III.	I	I	16579

¹³ **N**ota. Quando aggregatum ex Altitudine Æquatoris, & declinatione
parallelorum, grad. 90. excedit, accipitur Sinus complementi illius ad gr.
180. vt infra prax 8. num. 4.

*Specialis Calculus Altitudinum, & Azimuthorum Ca-
pricorni pro Tabula vtriusque Horarij, declinantis
ad Ortum grad. 54. & Canceri pro declinante
ijsdem gradibus ad Occasum.*

¹⁴ **H**abitis Logarithmo Inuenti secundi omnibus horis communi 992119.
Inuenti tertij Sinu 16579. & Inuento quarto, nempe angulis singularum
horarum, per numerum 11. & 12. superioris praxis, proceditur ad inquirendum
Inuentum quintum, ac sextum, ijsdem seruatis compendijs, & respondentia ho-
rarum, in eodem Tropico, vel in opposito.

Si enim distantia, siue Angulus Horarius excedit quadrantem, & id ò in cal-
culo Inuenti quinti, assumitur Logarithmus excessus; vt habeas Inuentum sex-
tum Tropici Capricorni declinantis ad Ortum, Inuento tertio subtrahendum est
quintum; addendum autem pro Inuento sexto alterius horæ correspondentis in
eodem Tropico Capricorni; ita, vt horæ nonæ, respondeat hora vigesima
prima; hora decimæ, hora vigesima secunda; horæ vndecimæ, hora vige-
sima tertia, &c.

G 2 Sin

quæ horas

, supra, &
cum Semi-
m. 34. qui
m. 28., similiter
78. m. 32.
casum, ar-
peragenda,unt etiam,
nerum 24.
2. Italica innicarum
Alti-

hora	Horæ ab Autro ad Occasum, & ab Aquilone ad Ortum.
10	
11	
12	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

ti.
n. 48. est di-
nomica, ad-
ed distantia
pro Capri-
tore autem

De

Sin verò Angulus horarius quadrantem non excedit: quare, vt in prædicto calculo acceptus fuit Anguli horarij Logarithmus secundus; tñ pro Inuentio sexto horæ Capricorni quæsitæ, tertio Inuento addendum est quintum; subtrahendum autem pro alia hora eidem respondente. Quæ quidem respondebit, vel in eodem parallelo, vt modo dixi, vel in alio opposito. In eodem, si Inuentum quintum, tertio maius est; vt in calculo horæ decimæ Capricorni Orientalis; in opposito, si minus; vt in calculo horæ vndecimæ eiusdem Tropici Capricorni: Vbi summa Inuenti quinti, & tertij dat Inuentum sextum, idest Sinum Altitudinis ipsius horæ vndecimæ ad Ortum; Differentia autem præbet Inuentum sextum horæ vigesimæ quintæ Cancrī, pro declinante Occidentali. Sic horæ duodecimæ Capricorni Orientalis, respondet hora vigesima quarta Cancrī, in Occidentali; & horæ decimæ tertie Capricorni, hora vigesima tertia Cancrī; horæ decimæ quartæ, hora vigesima secunda; horæ decimæ quintæ, hora vigesima prima, &c. Ita nimirum, vt simul efficiant horas

Calculi Altitudinum, Vmbrarum, & Azimuthorum Capricorni

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Vmbræ Gr. M P. M.
9. & 21	7. 57	Excessus dist. gr. 75. Logar. 1. 914085		
		Logar. Inu. secundi communis *992119	*16579	
		Summa, Logar. Inuenti quinti 906204	11523	
		Differentia Sinuū, Altitudinis horæ 9. 70	5056	2. 54 236. 54
10. & 22	82. 57	Summa, Sin. Altitud. horæ 21. 70 Orient.	28102	16. 19 41. 0
		Logarithmus secundus 908897		
		Logarit. communis Inuenti 2. *992119	*16579	
		Summa, Logar. Inuenti quinti 901016	10279	
11	67. 57	Summa, Sinus Altit. horæ 10. 70 Orient.	26858	15. 35 43. 2
		Differentia, Sin. Altit. horæ 22. 70 Occid.	6300	3. 37 189. 51
		Logarithmus secundus 957451		
		Logarithmus communis *992119	*16579	
		Summa, Logar. Inuenti quinti 949570	31319	
		Summa, Sinus Altit. horæ 11. 70 Orient.	47898	28. 37 22. 0
		Differentia, Sin. Altit. horæ 25. 25 Occid.	14740	8. 29 80. 27
				58.

triginta sex. In quo observanda est differentia huius calculi, à calculis Horizontalium, & Verticalium, directè meridiem aspicientium. Neque enim in calculo declinantium horarum respondens in opposito parallelo ad eandem Tabulam Gnomonicam pertinet, sed ad Tabulam oppositæ declinationis. Quamobrem supputando Altitudines Capricorni pro declinante ad Ortum, habentur simul Altitudines Cancræ pro declinante ad Occasum; & è conuerso, eadem supputatione Altitudinum Cancræ pro declinante Orientali, patefunt Altitudines etiam Capricorni Occidentalis; seruata tamen methodo additionis, vel subtractionis Inuenti tertij.

De Vmbrarum calculo nihil est addendum. Supputantur enim semper, & vbique vna, & eadem methodo, quæ praxi nona superioris capitis tradita est.

Idem Azimutha eadem semper regula calculo exarantur, quæ habetur in capite præcedenti, praxi decima; Ita tamen, vt aliter supputentur in parallelo extra Equatorem, & aliter in ipso Equatore, vt ibidem explicauimus.

ad Ortum, & Cancræ ad Occasum paradigma.

ud. Vmbræ M. P. M.		Logarith. & Tomologar.
	Logarithmus anguli complementi vsque ad 180. Arcus 82. m. 3.	995580
	Logarithmus complementi declinationis Solis gr. 23. m. 30. Generalis	*996240
	Tomologarithmus Altitudinis horæ 9. 70. grad. 2. m. 54.	56
54 236. 54	Summa, Logarith. Azimuth horæ 9. 70. grad. 65. m. 25. Arcus 153. m. 33.	995876
19 41. 0	Tomologarithmus horæ 21. 70	1785
	Logarith. Azimuth horæ 21. dictæ, grad. 71. m. 9. Arcus grad. 290. m. 7.	997605
	Logarithmus primus distantie	999670
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis horæ 10. 70 grad. 15. m. 35.	1626
35 43. 2	Summa, Logarith. Azimuth horæ 10. 70. gr. 70. m. 53. Arcus gr. 148. m. 5.	997536
37 189. 51	Tomologarithmus horæ 22. 70. Altitudinis grad. 3. m. 37.	86
	Logarith. Azimuth horæ 22. 70. grad. 65. m. 46. Arcus grad. 284. m. 44.	995996
	Logarithmus primus distantie	996701
	Logarithmus Generalis	*996240
	Tomologarithmus horæ 11. 70. cuius Altitudinis grad. 28. m. 37.	5658
37 22. 0	Summa, Logarith. Azimuth horæ 11. 70. gr. 75. m. 31. Arcus 143. m. 27.	998599
29 80. 27	Tomologarithmus horæ 25. 26. cuius Altitudinis grad. 8. m. 29.	478
Se-	Summa, Logarith. Azimuth horæ 25. 26. gr. 59. m. 15. Arcus gr. 261. m. 47.	998419
		Se-

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad.	Logarithmi secundi	Sinus	Altitud. Gr. M. P. M.	Vmbræ M.
12	52. 57	Logarithmus secundus	977996		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	970115	50226	
		Summa, Sinus Altit. horæ 12. 70 Orient.	66805	41. 55	13. 22
		Differentia, Sin. Altit. horæ 24. 25 Occid.	33647	19. 40	33. 35
13	37. 57	Logarithmus secundus	989683		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	981802	65781	
		Summa, Sinus Altit. horæ 13. 70 Orient.	82360	55. 27	8. 16
		Differentia, Sin. Altit. horæ 23. 25 Occid.	49202	29. 32	21. 11
14	22. 57	Logarithmus secundus	996419		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	988538	76791	
		Summa, Sinus Altit. horæ 14. 70 Orient.	93370	69. 2	4. 36
		Differentia, Sin. Altit. horæ 22. 25 Occid.	60212	37. 1	15. 55
15	7. 57	Logarithmus secundus	995580		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	991699	82593	
		Summa, Sinus Altit. horæ 15. 70 Orient.	99172	82. 37	1. 33
		Differentia, Sin. Altit. horæ 21. 25 Occid.	66014	41. 19	13. 39
16	7. 3	Logarithmus secundus	999670		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	991789	82773	
		Summa, Sinus Altit. horæ 16. 70 Orient.	99352	83. 29	1. 12
		Differentia, Sin. Altit. horæ 20. 25 Occid.	66194	41. 27	13. 35

Se-

Capricorni ad Ortum, & Cancri ad Occasum paradigma.

		Logarith. & Tomologar.
Logarithmus primus distantiae		990206
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 12. 70. grad. 41. m. 55.		12836
Summa, Logar. Azimuth horæ 12. 70. gr. 79. m. 37. Arcus gr. 139. m. 21.		999282
Tomologarithmus Altitudinis horæ 24. 26. grad. 19. m. 40.		2610
Summa, Logarith. Azimuth horæ 24. 26. grad. 51. m. 1. Arcus 270. m. 0.		989056
Logarithmus primus		978886
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 13. 70. grad. 55. m. 27.		24632
Summa, Logar. Azimuth horæ 13. 70. grad. 83. m. 58. Arcus gr. 135. m. 0.		999758
Tomologarithmus Altitudinis horæ 23. 26. grad. 29. m. 32.		6045
Summa, Logarith. Azimuth horæ 23. 26. gr. 40. m. 25. Arcus gr. 280. m. 37.		981171
Logarithmus primus		959098
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 14. 70. grad. 69. m. 2.		44633
Summa, Logarith. Azimuth horæ 14. 70. gr. 87. m. 55. Arcus gr. 131. m. 3.		999971
Tomologarithmus Altitudinis horæ 22. 26. grad. 37. m. 1.		9775
Summa, Logar. Azimuth horæ 22. 26. gr. 26. m. 36. Arcus grad. 24. m. 26.		965133
Logarithmus primus		914085
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 15. 70. grad. 82. m. 37.		89107
Summa, Logar. Azimuth horæ 15. 70. gr. 80. m. 45. Arcus gr. 119. m. 41.		999432
Tomologarithmus Altitudinis horæ 21. 26. grad. 41. m. 19.		12431
Summa, Logar. Azimuth horæ 21. 26. grad. 9. m. 43. Arcus gr. 311. m. 19.		922756
Logarithmus primus		908897
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 16. 70. grad. 83. m. 29.		94503
Summa, Logar. Azimuth horæ 16. 70. gr. 82. m. 38. Arcus gr. 316. m. 20.		999640
Tomologarithmus Altitudinis horæ 20. 26. grad. 41. m. 27.		12. 22
Summa, Logar. Azimuth horæ 20. 26. grad. 8. m. 38. Arcus gr. 329. m. 40.		917658
		Se.

Sequuntur calculi Altitudinum Vmbrarum, & Azimuthorum

Horæ	Distantia Grad. M.		Logarithmi secundi	Sinus	Altitud. Gr. M.	Vmbræ P. M.
17	22. 3	Logarithmus secundus	996701	*16579		
		Logarithmus communis	*992119			
		Summa, Logar. Inuenti quinti	988820			
		Summa, Sinus Altit. horæ 17. 70 Orient.	93889		69. 52	4. 24
		Differentia, Sin. Altit. horæ 19. 25 Occid.	60731		37. 24	15. 42
18	37. 3	Logarithmus secundus	990206	*16579		
		Logarithmus communis	*992119			
		Summa, Logar. Inuenti quinti	982325			
		Summa, Sinus Altit. horæ 18. 23 Orient.	83145		56. 15	8. 1
		Differentia, Sin. Altit. horæ 18. 25 Occid.	49987		29. 59	20. 48
19	52. 3	Logarithmus secundus	978886	*16579		
		Logarithmus communis	*992119			
		Summa, Logar. Inuenti quinti	971005			
		Summa, Sinus Altit. horæ 19. 70 Orient.	67858		42. 44	12. 59
		Differentia, Sin. Altit. horæ 17. 25 Occid.	34700		20. 18	32. 26
20	67. 3	Logarithmus secundus	959098	*16579		
		Logarithmus communis	*992119			
		Summa, Logar. Inuenti quinti	951217			
		Summa, Sinus Altit. horæ 20. 70 Orient.	49108		29. 25	21. 17
		Differentia, Sin. Altit. horæ 16. 25 Occid.	15950		9. 11	74. 14

Speciales calculi Altitudinum, Vmbrarum, & Azimuthorum

Hic pro Inuento sexto Cancræ ad Ortum, & Inuentis quinto, & Tertio subtrahe minus maiori; & pro Capricorno ad Occasum vtrumque collige, nisi Angulus Horarius quadrantem excedit; nam tali casu contraria methodus adhibenda est.

Cor-

cap.

Capricorni ad Ortum, & Canceri ad Occasum paradigma.

nuthorum

id. Vmbra
M. P. M.

52	4. 24
24	15. 42
15	8. 1
59	20. 48
44	12. 59
18	32. 26
25	21. 17
11	74. 14

	Logarith. & Tomologar.
Logarithmus primus	957451
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 17. 70 grad. 69. m. 52.	46318
Summa, Logar. Azimuth horæ 17. 70 grad. 88. m. 50. Arcus gr. 310. m. 8.	999991
Tomologarithmus Altitudinis horæ 19. 25 grad. 37. m. 24.	9995
Summa, Logar. Azimuth horæ 19. 25 grad. 25. m. 41. Arcus gr. 346. m. 43.	963686
Logarithmus primus	977996
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 18. 70 grad. 56. m. 15.	25526
Summa, Logar. Azimuth horæ 18. 70 gr. 84. m. 1. Arcus gr. 302. m. 59.	999762
Tomologarithmus Altitudinis horæ 18. 25 grad. 29. m. 59.	6240
Summa, Logar. Azimuth horæ 18. 25 gr. 39. m. 38. Arcus grad. 0. m. 40.	980476
Logarithmus primus	989683
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 19. 70 grad. 42. m. 44.	13400
Summa, Logar. Azimuth horæ 19. 70 gr. 79. m. 51. Arcus gr. 298. m. 53.	999323
Tomologarithmus Altitudinis horæ 17. 25 grad. 20. m. 18.	2785
Summa, Logar. Azimuth horæ 17. 25 gr. 50. m. 27. Arcus gr. 11. m. 29.	988708
Logarithmus primus	996419
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 20. 70 grad. 29. m. 25.	5995
Summa, Logar. Azimuth horæ 20. 70 gr. 75. m. 49. Arcus gr. 294. m. 47.	998654
Tomologarithmus Altitudinis horæ 16. 25 grad. 9. m. 11.	560
Summa, Logar. Azimuth horæ 16. 25 gr. 58. m. 48. Arcus gr. 19. m. 50.	993219

Canceri declinantis ad Ortum, & Capricorni ad Occasum.

Correspondentia Horarum Canceri Orientalis, & Capricorni Occidentalis; eadem est, ac Horarum Capricorni Orientalis, & Canceri Occidentalis; nempe, vt simul compleant numerum triginta sex.

orum

Tertio sub
amque col-
a contraria

Cor-

H

Cal-

Calculi Altitudinum, Vmbrarum, & Azimut horum Cancrī

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.	Vmbræ P. M.
7	76. 25	Logarithmus secundus	937081		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	929200		
		Differentia, Sin. Altit. horæ 7. 25 Orient.	3016	1. 44	396. 28
		Summa, Sinus Altit. horæ 29. 70 Occid.	36174	21. 12	30. 56
8	61. 25	Logarithmus secundus	967982		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	960101		
		Differentia, Sin. Altit. horæ 8. 25 Orient.	2349	13. 30	49. 59
		Summa, Sinus Altit. horæ 28. 70 Occid.	59507	34. 24	17. 32
9	46. 25	Logarithmus secundus	983848		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	975963		
		Differentia, Sin. Altit. horæ 9. 25 Orient.	40921	24. 9	26. 46
		Summa, Sinus Altit. horæ 27. 70 Occid.	74079	47. 48	10. 53
10	31. 25	Logarithmus secundus	993115		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	985234		
		Differentia, Sin. Altit. horæ 10. 25 Orient.	54603	33. 6	18. 24
		Summa, Sinus Altit. horæ 26. 70 Occid.	87761	61. 21	6. 33
11	16. 25	Logarithmus secundus	998192		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	990311		
		Differentia, Sin. Altit. horæ 11. 25 Orient.	63424	39. 22	14. 38
		Summa, Sinus Altit. horæ 25. 70 Occid.	96582	74. 59	3. 13

Se-

ad Ortum, & Capricorni ad Occasum paradigmata.

ud. Vmbræ M. P. M.		Logarith. & Tomologar.
	Logarithmus primus	998768
	Logarithmus Generalis	*996240
44	Tomologarithmus Altitudinis horæ 7. 25. grad. 1. m. 44.	20
12	Summa, Logar. Azimuth horæ 7. 25. gr. 63. m. 6. Arcus gr. 113. m. 4.	995028
	Tomologarithmus Altitudinis horæ 29. 7. grad. 21. m. 11.	3043
	Summa, Logarith. Azimuth horæ 29. 7. grad. 72. m. 58. Arcus 214. m. 0.	998051
	Logarithmus primus	994355
	Logarithmus Generalis	*996240
30	Tomologarithmus Altitudinis horæ 8. 25. grad. 13. m. 30.	917
24	Summa, Logar. Azimuth horæ 8. 25. grad. 55. m. 53. Arcus gr. 94. m. 53.	991512
	Tomologarithmus Altitudinis horæ 28. 7. grad. 34. m. 24.	9491
	Summa, Logarith. Azimuth horæ 28. 7. gr. 77. m. 43. Arcus gr. 218. m. 45.	999914
	Logarithmus primus	985996
	Logarithmus Generalis	*996240
9	Tomologarithmus Altitudinis horæ 9. 25. grad. 24. m. 9.	3978
48	Summa, Logarith. Azimuth horæ 9. 25. gr. 46. m. 43. Arcus gr. 85. m. 41.	986214
	Tomologarithmus Altitudinis horæ 27. 7. grad. 47. m. 48.	17281
	Summa, Logar. Azimuth horæ 27. 7. gr. 81. m. 28. Arcus gr. 222. m. 30.	999517
	Logarithmus primus	971705
	Logarithmus Generalis	*996240
6	Tomologarithmus Altitudinis horæ 10. 25. grad. 33. m. 6.	7690
21	Summa, Logar. Azimuth horæ 10. 25. gr. 34. m. 48. Arcus gr. 73. m. 46.	975635
	Tomologarithmus Altitudinis horæ 26. 7. grad. 61. m. 21.	31925
	Summa, Logar. Azimuth horæ 26. 7. gr. 85. m. 34. Arcus gr. 226. m. 36.	999870
	Logarithmus primus	945120
	Logarithmus Generalis	*996240
22	Tomologarithmus Altitudinis horæ 21. 25. grad. 39. m. 22.	11176
59	Summa, Logar. Azimuth horæ 11. 25. gr. 19. m. 35. Arcus gr. 58. m. 33.	952536
	Tomologarithmus Altitudinis horæ 25. 7. grad. 74. m. 59.	58606
	Summa, Logar. Azimuth horæ 25. 7. gr. 87. m. 45. Arcus gr. 233. m. 17.	999066

H 2 Se.

Sequuntur calculi Altitudinum Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P.	Vmbræ P. M.
12	1. 25	Logarithmus secundus	999987		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	992106	83372	
		Differentia, Sin. Altit. horæ 12. 25 Orient.	67793	42. 41	13. 1
13	13. 35	Logarithmus secundus	998768		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	990887	81072	
		Differentia, Sin. Altit. horæ 13. 35 Orient.	64493	40. 9	14. 14
14	28. 35	Logarithmus secundus	994355		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	986474	74234	
		Differentia, Sin. Altit. horæ 14. 35 Orient.	56655	34. 30	17. 28
15	43. 35	Logarithmus secundus	985996		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	978115	60413	
		Differentia, Sin. Altit. horæ 15. 35 Orient.	43834	26. 0	24. 36
16	58. 35	Logarithmus secundus	971705		
		Logarithmus communis	*992119	*16579	
		Summa, Logar. Inuenti quinti	963828	43471	
		Differentia, Sin. Altit. horæ 16. 35 Orient.	26892	15. 36	42. 59
		Summa, Sinus Altit. horæ 20. 30 Occid.	60050	36. 54	15. 59

Se-

nuthorum

Cancrī ad Ortum, & Capricorni ad Occasum paradigmata.

ud. M. P. M.	Vmbre M. P. M.		Logarith. & Tomologar.
		Logarithmus primus distantia	839310
		Logarithmus Generalis	*996240
41	13. 1	Tomologarithmus Altitudinis horæ 12. 25. grad. 42. m. 41.	13365
16	0. 22	Summa, Logarith. Azimuth horæ 12. 25. gr. 1. m. 46. Arcus gr. 40. m. 44.	848915
		Tomologarithmus Altitudinis horæ 24. 10. grad. 88. m. 16.	150292
		Summa, Logar. Azimuth horæ 24. 10. gr. 46. m. 12. Arcus gr. 270. m. 0.	985842
		Logarithmus primus distantia	937081
		Logarithmus Generalis	*996240
9	14. 14	Tomologarithmus Altitudinis horæ 13. 25. grad. 40. m. 9.	11670
33	2. 39	Summa, Logarith. Azimuth horæ 13. 25. gr. 16. m. 22. Arcus gr. 22. m. 36.	944991
		Tomologarithmus Altitudinis horæ 23. 10. grad. 77. m. 38.	66638
		Summa, Logar. Azimuth horæ 23. 10. gr. 87. m. 31. Arcus gr. 48. m. 33.	999959
		Logarithmus primus	967982
		Logarithmus Generalis	*996240
30	17. 28	Tomologarithmus Altitudinis horæ 14. 25. grad. 34. m. 30.	8401
54	5. 53	Summa, Logarith. Azimuth horæ 14. 25. gr. 32. m. 10. Arcus gr. 6. m. 42.	972623
		Tomologarithmus Altitudinis horæ 22. 10. grad. 63. m. 54.	35661
		Summa, Logar. Azimuth horæ 22. 10. gr. 85. m. 48. Arcus gr. 55. m. 16.	999883
		Logarithmus primus	983848
		Logarithmus Generalis	*996240
0	24. 36	Tomologarithmus Altitudinis horæ 15. 25. grad. 26. m. 0.	4634
26	9. 55	Summa, Logar. Azimuth horæ 15. 25. gr. 44. m. 42. Arcus gr. 354. m. 15.	984722
		Tomologarithmus Altitudinis horæ 21. 10. grad. 50. m. 26.	19588
		Summa, Logar. Azimuth horæ 21. grad. 83. m. 0. Arcus grad. 58. m. 2.	999676
		Logarithmus primus	993115
		Logarithmus Generalis	*996240
36	42. 59	Tomologarithmus Altitudinis horæ 16. grad. 15. m. 36.	1630
54	15. 59	Summa, Logar. Azimuth horæ 16. gr. 54. m. 21. Arcus gr. 344 m. 37.	990985
		Tomologarithmus Altitudinis horæ 20. grad. 36. m. 54.	9708
		Summa, Logarith. Azimuth horæ 20. grad. 78. m. 9. Arcus gr. 62. m. 53.	999063

Se-

Se-

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Hora	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Vmbræ Gr. M. P. M.
17	73. 35	Logarithmus secundus	945120	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	937239	23571
		Differentia, Sin. Altit. horæ 17. 28 Orient.	6992	4. 0 171.37
		Summa, Sinus Altit. horæ 19. 28 Occid.	40150	23. 40 27.23
18	88. 35	Logarithmus secundus	839310	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	831429	2065
		Summa, Sinus Altit. horæ 18. 70 Occid.	18644	10. 45 63.12
19	13. 35	Differentia, Sin. Altit. horæ 30. 70 Occid.	14514	8. 21 81.46
		Logarithmi excessus	937081	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	929200	19595
		Differentia, Sin. Altit. horæ 19. 70 Occid.	3016	1. 44 396.38
		Summa, Sinus Altit. horæ 19. 70 Occid.	36174	21. 49 29.59

Speciales calculi Altitudinum,

Logarithmus Altitudinis Æquatoris colligitur ex Logarithmo secundo Anguli horarij, & Logarithmo primo Altitudinis Æquatoris, in muro delcinante (modo grad. 65. m. 26.) cuius Logarithmus est 995879.0m.

8	87. 11	Logarithmus secundus anguli	869144	
		Logarithm. Altitud. Æquator. Mural.	*995879	
		Summa, Logar. Altit. h. 8. Or. & 28. Occ.	865023	2. 34 267.42
9	72. 11	Logarithmus secundus	948568	
		Logarithmus communis	*995879	
		Summa, Logar. Altit. h. 9. Or. & 27. Occ.	944447	16. 9 41. 26

Se.

Capricorni ad Ortum, & Cancri ad Occasum paradigma.

		Logarithmi, & Tomologar.
	Logarithmus primus	998192
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis horæ 17. grad. 4. m. 0.	106
0	Summa, Logar. Azimuth horæ 17. grad. 61. m. 51. Arcus grad. 337. m. 7.	994538
40	Tomologarithmus Altitudinis horæ 19. grad. 23. m. 40.	3815
	Summa, Logar. Azimuth horæ 19. grad. 73. m. 50. Arcus grad. 67. m. 12.	998247
	Logarithmus primus	999987
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis horæ 18. Occident. grad. 10. m. 45.	769
45	Summa, Logar. Azimuth horæ 18. Occid. gr. 68. m. 56. Arcus gr. 72. m. 6.	996996
21	Tomologarithmus Altitudinis horæ 30. grad. 8. m. 21.	463
	Summa, Logar. Azimuth horæ 30. grad. 67. m. 55. Arcus grad. 208. m. 57.	996690
	Logarithmus complementi excessus grad. 13. m. 35.	998768
	Logarithmus Generalis	*996240
44	Tomologarithmus Altitudinis horæ 19. grad. 1. m. 44.	20
	Summa, Logar. Azimuth horæ 19. grad. 63. m. 6. Arcus grad. 77. m. 56.	995028
49	Tomologarithmus Altitudinis horæ 29. grad. 21. m. 49.	3227
	Summa, Logar. Azimuth horæ 29. grad. 73. m. 47. Arcus grad. 214. m. 49.	998235

& Azimuth Horarum Aequatoris.

nibus horis communis.

Eadem Altitudo, & idem Azimuth vtriusque Tabulis, Orientalis scilicet, & Occidentali deferuit; ad num. 36.

	Logarithmus primus distantiae	999947
	Tomologarithmus Altitudinis grad. 2. m. 34.	43
34	Summa, Log. Azimuth gr. 88. m. 48. } Arcush. 8. Orient. gr. 127. m. 43.	999990
	Logarithmus primus	997865
	Tomologarithmus Altitudinis grad. 16. m. 9.	1749
9	Summa, Log. Azimuth gr. 82. m. 23. } Arcush. 9. Orient. gr. 121. m. 21.	999614
		327
		998235

Se.

Sequuntur Calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.		Logarithmi secundi	Altitud. Gr. M.	Vmbræ P. M.
10	57. 11	Logarithmus secundus anguli Logarithmus Altit. Equator. Mural. *	973396 995879		
		Summa, Log. Altit. h. 10. Or. & 26. Occ.	969275	29. 32	21. 11
11	42. 11	Logarithmus secundus Logarithmus communis	986982 995879		
		Summa, Log. Altit. h. 11. Or. & 25. Occ.	982861	42. 22	13. 9
12	27. 11	Logarithmus secundus Logarithmus communis	994917 995879		
		Summa, Log. Altit. h. 12. Or. & 24. Occ.	990796	54. 0	8. 43
13	12. 11	Logarithmus secundus Logarithmus communis	999011 995879		
		Summa, Log. Altit. h. 13. Or. & 23. Occ.	994890	62. 45	6. 11
14	2. 49	Logarithmus secundus Logarithmus communis	999947 995879		
		Summa, Log. Altit. h. 14. Or. & 22. Occ.	995826	65. 17	5. 31
15	17. 49	Logarithmus secundus Logarithmus communis	997865 995879		
		Summa, Log. Altit. h. 15. Or. & 21. Occ.	993744	59. 59	6. 56
16	32. 49	Logarithmus secundus Logarithmus communis	992449 995879		
		Summa, Log. Altit. h. 16. Or. & 20. Occ.	988328	49. 51	10. 7
17	47. 49	Logarithmus secundus Logarithmus communis	982705 995879		
		Summa, Log. Altit. h. 17. Or. & 19. Occ.	978584	37. 38	15. 34
18	62. 49	Logarithmus secundus Logarithmus communis	965976 995879		
		Summa, Log. Altit. h. 18. Or. & 18. Occ.	961855	24. 33	26. 16

Aequatoris ad Ortum, & ad Occasum paradigmata.

uthorum

itud. Vmbra
M. P. M.

			Logarith. & Tomologar.
		Logarithmus primus distantiae	992449
		Tomologarithmus Altitudinis grad. 29. m. 12.	6045
2. 32	21. 11	Summa, Log. Azimuth gr. 75. m. 0. } Arcush. 10. Orient. gr. 113. m. 58. } Arcush. 26. Occid. gr. 246. m. 2.	998494
		Logarithmus primus	982705
		Tomologarithmus Altitudinis grad. 42. m. 22.	13144
2. 22	13. 9	Summa, Log. Azimuth gr. 65. m. 20. } Arcush. 11. Orient. gr. 104. m. 18. } Arcush. 25. Occid. gr. 255. m. 42.	995849
		Logarithmus primus	565976
		Tomologarithmus Altitudinis grad. 54. m. 0.	23078
4. 0	8. 43	Summa, Log. Azimuth gr. 51. m. 0. } Arcush. 12. Orient. gr. 90. m. 0. } Arcush. 24. Occid. gr. 270. m. 0.	989054
		Logarithmus primus	932436
		Tomologarithmus Altitudinis grad. 62. m. 45.	33925
2. 45	6. 11	Summa, Log. Azimuth gr. 27. m. 27. } Arcush. 13. Orient. gr. 66. m. 25. } Arcush. 23. Occid. gr. 293. m. 35.	966361
		Logarithmus primus	869144
		Tomologarithmus Altitudinis grad. 65. m. 17.	37869
5. 17	5. 31	Summa, Log. Azimuth gr. 6. m. 45. } Arcush. 14. Orient. gr. 32. m. 13. } Arcush. 22. Occid. gr. 327. m. 47.	907013
		Logarithmus primus	948568
		Tomologarithmus Altitudinis grad. 59. m. 59.	30081
59. 59	6. 56	Summa, Log. Azimuth gr. 37. m. 42. } Arcush. 15. Orient. gr. 1. m. 16. } Arcush. 21. Occid. gr. 368. m. 44.	978649
		Logarithmus primus	973396
		Tomologarithmus Altitudinis grad. 49. m. 51.	19118
49. 51	10. 7	Summa, Log. Azimuth gr. 57. m. 12. } Arcush. 16. Orient. gr. 341. m. 46. } Arcush. 20. Occid. gr. 18. m. 14.	992454
		Logarithmus primus	986982
		Tomologarithmus Altitudinis grad. 37. m. 38.	10131
37. 38	15. 34	Summa, Log. Azimuth gr. 69. m. 20. } Arcush. 17. Orient. gr. 129. m. 38. } Arcush. 19. Occid. gr. 30. m. 22.	997113
		Logarithmus primus	994917
		Tomologarithmus Altitudinis grad. 24. m. 33.	4115
24. 33	26. 16	Summa, Log. Azimuth gr. 77. m. 57. } Arcush. 18. Orient. gr. 321. m. 1. } Arcush. 18. Occid. gr. 38. m. 59.	999032

I

Se.

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.	Logarithmi Altitud. Vmbræ secundi (Gr. M. P. M.)			
19	77. 49	Logarithmus secundus anguli	932436		
		Logarithm. Altitud. Equator. Mural.	*995879		
		Summa, Logar. Alt. h. 8. Or. & 28. Occ.	928315	11. 4	61. 21

Arcus Peripheriæ pro declinantibus ab Austro. & ab Aquilone ad Ortum componere.

17 **P**ro horis Capricorni (ex doctrina num. 10. praxis 1. huius libri) duplex casus effertur.

Primus, quando Altitudo Equatoris plani est maior grad. 23. m. 30. & minor grad. 66. m. 30. ut in presenti exemplo, ubi talis Altitudo, ex num. 5. huius praxis, est grad. 65. m. 26.

18 *Secundus casus* est, quando Altitudo Equatoris plani excedit gr. 66. m. 30. In primo casu, ex Tabula Arcuum Semidiurnorum accipitur Arcus Capricorni respondens Altitudini Equatoris supra planum, non secus, ac si esset Altitudo Poli. Ut in nostro exemplo grad. 17. m. 6. quantus est Arcus, qui sumpta differentia proportionali, more Astronomico, respondet Altitudini prædictæ grad. 65. m. 26.

Tum pro horis ante lineam styli maioris distantie à Meridiano, quam Arcus ipse grad. 17. m. 6. subtrahere Azimuth gradibus 180. & residuo adde inclinationem Styli summa erit Arcus quæsitus Peripheriæ.

Exemplum; Quia horæ 9. Capricorni distantia à Meridiano est grad. 97. m. 59. subtrahere eius Azimuth grad. 65. m. 25. gradibus 180. relinquitur differentia grad. 114. m. 35. cui addita inclinatione Styli supra num. 5. inuenta grad. 38. m. 58. colligitur Arcus quæsitus grad. 153. m. 33. collocandus in Tabula e regione hor 9. in columna arcuum Capricorni.

Pro iisdem autem horis minoris distantie à Meridiano, quam Arcus grad. 17. m. 6. additis simul Azimuth, & inclinatione Meridianorum, emerget Arcus Peripheriæ quæsitus.

Exemplum, sit hora 15. cuius distantia Meridiana cum sit grad. 7. m. 57. quippe minor Arcu grad. 17. m. 6. illius Azimuth grad. 80. m. 45. additum inclinationis Styli grad. 38. m. 58. tribuit Arcum Peripheriæ grad. 119. m. 43.

Atqui post transitum lineæ substylaris, si hora sit distantie minoris, quam Arcus prædictus, subtrahere Azimuth gradibus 360. & residuo adde inclinationem styli, colliges Arcum Peripheriæ; dummodo hæc summa grad. 360. non excedat; quod si excedat, abijce grad. 360. & residuum erit idem Arcus quæsitus.

Exem-

Aequatoris ad Ortum, & ad Occasum paradigma.

		Logarithmi, & Tomologar.
Logarithmus primus		999011
Tomologarithmus Altitudinis grad. 11. m. 4.		815
Summa, Log. Azimuth gr. 84. m. 53.	Arcush. 19. Orient gr. 314. m. 5. Arcush. 17. Occid. gr. 45. m. 55.	999826

Exemplum. Quoniam horæ 16. Capricorni distantia est grad. 7. m. 3. scilicet minor Arcu grad. 17. m. 6. subtrahe eius Azimuth grad. 82. m. 38. gradibus 360. & relinquentur grad. 277. m. 22. Ijs adde inclinationem Sryli grad. 38. m. 58. & colliges grad. 316. m. 20. pro Arcu Peripheriæ quæsito.

Sin autem distantia sit maior Arcu predicto, addantur simul Azimuth; inclinatio
Styli, & Semicirculus grad. 180. nam summa inde collecta erit Arcus in columna Ca-
pricorni collocandus.

Exempla patent in horis 17. 18. 19. &c.

19 In secundo casu, nulla habita ratione distantiae, pro Arcubus Peripheriae omnium horarum ante transitum lineae substylaris Azimutha subtrahantur Semicirculo grad. 180. post transitum vero addantur; in super adiecta semper inclinatione styli.

Exemplum primum. In plano declinate grad. 56. Altitudo Aequatoris est grad. 66. m. 43. Inclination Styli grad. 39. m. 39. Queritur Arcus Peripherie horae 9. Capricorni, quae est ante transitum linea substylaris: Subtrahae Azimuth illius grad. 66. m. 0. Semicirculo grad. 180. relinquuntur grad. 114. m. 0. His adijce Styli inclinationem gr. 39. m. 39. colliges arcum grad. 153. m. 39.

Exemplum secundum. In eodem plano. Queritur Arcus horæ 20. quæ contingit post transitum Styli. Iungantur simul Azimuth eiusdem horæ grad. 74.m.40. grad. 180.& inclinatio Styli gr.39.m.39. colligentur gr.294.m.19.

Prohoris Aequatoris, & Cancri.

20 **A**nte transitum lineæ Styli adduntur Azimutha tantum inclinationi Styli : post
verò subtrahuntur gradibus 360. & residuo additur inclinatio Styli; abiectis
gradibus 360. si summa excedat ut supra.

*Arcus eofdem Peripheria conficere pro declinantibus
ab Austro, & ab Aquilone ad Occafum.*

21 **O**Mnia peragantur ficut in declinantibus ad Ortum; hoc vno excepto, ut inclinatio styli semper subtrahatur.

Præterea observandum est, horas omnes in plano declinante ad Occasum,

respondentes horis declinantis ad Ortum esse contrariae denominationis, tum ratione paralleli, tum ratione transitus lineae substylaris; itaut horis Capricorni, ante transitum, in declinante ad Ortum, respondeant horae Cancrī post transitum, in declinante ad Occasum; & horis post transitum, horae ante transitum: Vnde in eliciendis earum arcibus peripheriae, proprii adhibendi sunt Canones, velut in declinantibus ad Ortum; semper tamen inclinatione Styli subducta.

Exemplum. In declinante iisdem gradibus 54. proponatur eliciendus pro declinante ad Occasum Arcus horae correspondentis horae undecimae Capricorni, quae est ante transitum substylaris, in declinante ad Ortum; cuius Azimuth est grad. 59. m. 15. Dico huic horae 11. iuxta dicta superius num. 14. respondere in declinante ad Occasum horam 25. nempe complementum ad 36. eamque esse duplicis denominationis oppositae, scilicet paralleli Cancrī, & post transitum Styli; ac proinde Arcum illius eliciendum per Canonem tertium, numeri 18. huius praxis.

Subtrahō itaque Azimuth grad. 59. m. 15. gradibus 360. relinquuntur grad. 300. m. 45. ē quibus rursus inclinationem Styli grad. 38. m. 58. subduco; & remanet Arcus quaesitus grad. 261. m. 47. pro hora 25. Cancrī in declinante ad Occasum grad. 54.

Tabulae hic non apponuntur, quia habentur infra lib. 2. Tab. 109.

Praxis IV. Tabulas construere pro Horologijs Verticalibus directē Ortum, & Occasum aspicientibus.

Haec Horologia describuntur in planis Meridiano aequidistantibus, quae proinde à Meridie, & Aquilone grad. 90. ad amussim declinant; unde & Meridiana dicuntur, & hor. 12. Videatur supra lib. 2. cap. 8. partis primae.

De praequisitis ad Calculum.

- 1** **P**rimū, conficienda est Tabella distantiarum horarum à Meridiano, sumpto Arcu Semidiurno Cancrī ad Altitudinem Poli Regionis, iuxta praeccepta praxis 7. superioris capituli; itaut vltimae horae distantia Arcum ipsum Semidiurnum Cancrī non excedat.
- 2** Pro Italicis ad latus distantiarum scribuntur etiam horae Capricorni; sicut in Tabella citatae praxis, num. 4. Vbi horae 24. Capricorni respondet hora 12. Cancrī; 23. Capricorni, 13. Cancrī, &c.
- 3** Distantiae Aequinoctiales formantur accipiendo grad. 90. pro hora 12. Italica, vel 6. Astronomica; reliquae verò subtractione, vel additione quindecim graduum.
- 4** Pro Astronomicis exordium sumitur ab hora 6. statuendo Cyphram, hoc est, 0, pro illius distantia. Reliquarum autem horarum distantiae hinc inde à sexta formantur, sumendo gradus quindecim pro singulis horis.
- 5** Pro Antiquis duodecimae distantia itidem est Cyphra, siue, 0; A qua hinc, inde

inde proceditur addendo quantitatem vnus horæ, quousque assumptus Arcus Semidiurnus Cancræ non exceditur. Sed oportet conficere seorsim distantias etiam Capricorni; vt in citata praxi 7. num. 7. capitis precedentis.

7 Tùm describantur Tabularum Diagrammata duo. Alterum pro Sciathe-rico Orientali; Alterum pro Occidentali; Singula suis Arcuum, & Umbrarum distincta laterculis, ac titulis; vt infra lib. 2. Tabula dua penultima, seu num. 181. & 182.

8 Pro *Astronomicis* tamen vnica Tabula sufficit, cum horis Orientalibus à dextris, & Occidentalibus à sinistris; ita vt sexta, sextæ; & septima, quinta, &c. vicissim respondeant. Vide praxim 1. cap. 8. primæ partis. Quibus præmissis prosequemur exemplum Horologij Italici sub Altitudine Poli grad. 45.

De Calculo Altitudinum, & Umbrarum Gnomonicarum, & Azimuthorum Solis.

9 Pro Calculo tùm Altitudinum, tùm Arcuum Azimuthalium Solis, in planis Meridianis, obseruetur Diagramma hic appositum, in quo HNOV, sit Plani Meridiani superficies, Ortum directè aspiciens; ac Horologij in ea describendi, veluti Horizon; in quo supputantur Arcus Azimuthales.

HO, Horizon loci ad latitudinem Poli grad. 45. m. o.

ATB, Axis Mundi, & Meridianus Plani; B, Polus Boreus; A, Austrinus.

VTN, Verticalis primarius loci. V, Vertex. N, Nadir.

ETQ, Æquator.

CD, Parallelus Cancræ; FG, Capricorni.

AIB, Circulus declinationis Solis horæ 18. Italicæ.

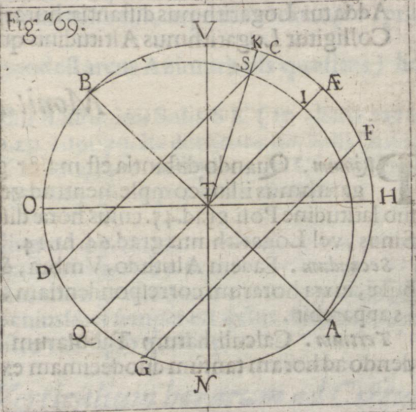
S, Sol existens in principio Cancræ horæ 18. Italicæ.

TSK, Verticalis Solis, cadens è T, Vertice Plani Gnomonici, per corpus Solis. S, in punctum K, Horizontis eiusdem plani.

SK, est Altitudo Solis supra planum. KB, Arcus Azimuthalis, à Meridiano plani Boreali numeratus.

10 His positis, examinandus est triangulus SBK, rectangulus in K; in quo tria sunt nota. Primum, Sinus Anguli recti, nempe Radius 100000. Secundum, basis, siue Hypotenusa esse B, quæ est Solis declinationis maxima

Fig. 69.



com-

complementum, scilicet, grad. 66. m. 30. quorum Sinus est 91706. Logarithmus 996240. *Tertium*, est Angulus distantiae horariae SBK, quem metitur Arcus Aequatoris AEI; & in praesenti exemplo horae 18. Italicae grad. 25. m. 46. Quorum Sinus est 43471. Logarithmus 963820. *Quibus datis.*

11 *Altitudo Solis quacumque hora data, in parallelis extra Aequatorem (ut in praesenti Diagrammate hora 18. Italica, nempe SK, in principio paralleli Cancr) tali reperitur Analogismo.*

Vt Radius 100000. Ad Solis declinationis complementi (in hoc exemplo) grad. 66. m. 30. Sinum 91706.

Ita, Anguli distantiae (nunc) grad. 25. m. 46. Sinus 43471. ad 39866. Sinum Altitudinis SK, grad. 23. m. 29. pro hora 18. Italica, data. Et sic in reliquis.

12 *Vel, Logarithmice.*

Logarithmo complementi declinationis paralleli Solis, iungatur Logarithmus distantiae à Meridiano horae datae, & colligetur Logarithmus Altitudinis quaesitae. Vt in allato exemplo horae 18. Italicae, Sole in principio Cancr.

Logarithmo complementi declinationis principij Cancr gr. 66.

m. 30. omnibus horis communis ————— 996240

Addatur Logarithmus distantiae horariae grad. 25. m. 46. ————— 963820

Colligitur Logarithmus Altitudinis quaesitae grad. 23. m. 29. ————— 960000

Monita.

13 *Primum.* Quando distantia est maior grad. 90. accipiat Sinus, vel Logarithmus illius complementi ad grad. 180. Sicut in calculo horae 24. sub latitudine Poli grad. 45. cuius horae distantia est grad. 115. m. 46. accipitur Sinus, vel Logarithmus grad. 64. m. 14.

14 *Secundum.* Eadem Altitudo, Umbra, & Arcus Azimuthalis, utrique Tabulae, iuxta horarum correspondentiam, deferuit; ut in sequentibus calculis apparebit.

15 *Tertium.* Calculi harum Tabularum incipiendi sunt ab hora 24. procedendo ad horam tantum duodecimam exclusivè.

De Vmbris.

16 *V*mbrae omnium Altitudinum Sciatherici Meridiani eodem prorsus modo supputantur, ac in reliquis horarijs, per *praxim 9. capitis primi, huius libri.*

De

17 *A*
rum d
Horiz
18 Hin
11. à N
10. &

Arc

19 *I* N ec
Ex da

Inda
Analog
Vt,
plo, ho
grad. 2
Arcus
20 *Vel,*
Log
Iung
Col
21 *Aequ*
Horizo

De rea

22 *H*
descup
22 Pro
Altitud
rudo.

De Altitudinibus horarum in Aequatore.

- 17 **A**Equator EQ , in his Sciathericis Meridianis est Verticalis primarius plani; ideo altitudines illius, supra planum, coincidunt cum horarum distantijs ab ipso Meridiano loci, HNOV ; quem in plano, munus Horizontis obire diximus.
- 18 Hinc fit, vt sine alio calculo, Altitudo Aequatoris hora 1. à Meridie, vel 11. à Media nocte, & horæ 17. & 19. Italicarum sit grad. 15. Sic horæ 2. vel 10. & 16. ac 20. Italicarum grad. 30. &c.

Arcus Azimuthales tùm parallelorum, tùm Aequatoris calculo exarare.

- 19 **I**n eodem triangulo SBK , rectangulo in K .
- Ex datis $\left\{ \begin{array}{l} \text{Crure } \text{SK}, \text{ quod semper est Altitudo Solis;} \\ \text{Basi } \text{SB}, \text{ quæ semper est complementum declinationis Solis;} \\ \text{in quouis parallelo; exempli causa, in præsentis exemplo, principio Cancrî.} \end{array} \right.$
- Indagatur Crus alterum KB ; (quod est arcus Azimuthalis quæsitus) hoc Analogismo.
- Vt, Radius 100000. ad secantem Altitudinis Solis SK (in allato exemplo, horæ 18. Italicæ) grad. 23. m. 29. 109030. Ita declinationis Solis (nunc) grad. 23. m. 30. Sinus 39875. Ad Sinum 43476. complementi Cruris, siue Arcus Azimuthalis quæsitum KB , grad. 64. m. 14. pro hora 18. Italicæ.
- 20 Vel, Logarithmicè.
- | | |
|--|--------|
| Logarithmo declinationis Solis grad. 23. m. 30. | 960070 |
| Iungatur Tomologarith. Altitud. Solis grad. 23. m. 29. | 3755 |
| Colligitur Logarith. compl. Azimuth grad. 64. m. 14. | 963825 |
- 21 Aequatoris autem Arcus horæ cuiuslibet semper est ipsius Altitudo supra Horizontem Regionis; vt in nostro exemplo grad. 45.

De reductione Arcuum Verticalium horarum ad Circuli Peripheriam in facie parietis Orientalis.

- 22 **H**ic diligenter obseruandum, cum loquimur de distantia Maiori, vel Minori grad. 90. spectandam esse distantiam cuiusvis horæ propriam, descriptam in Tabella.
- 22 Pro horis igitur Cancrî, distantie maioris gradibus 90. addatur arcus singulis Altitudo Aequatoris: & si Arcus fuerit, 0, accipitur tantum Aequatoris Altitudo.

- 24 Si distantia sit minor grad. 90. Arcus Verticalis auferatur gradibus 360. Et differentia inde collecta addatur Altitudo Aequatoris; & si proueniens summa exstat ad unguem grad. 360. Arcus Peripheria erit, 0; Si vero excesserit, abiectionis 360. relinquatur Arcus quaesitus.
- 25 Pro horis Capricorni. Si distantia hora fuerit maior grad. 90. Arcus auferatur gradibus 180. & residuo adijce Alitudinem Aequatoris. Quod si Arcus sit Cybira, sine 0, Altitudo Aequatoris adijciatur gradibus 180.
- 26 Si distantia fuerit minor gradibus 90. colligantur Arcus grad. 180. & Altitudo Aequatoris, & summa erit Arcus Peripheria quaesitus.
- 27 Aequatoris tandem horarum omnium Arcus est ipsius Aequatoris Altitudo, qui conuertitur in Arcus Peripheria, si addatur gradibus 270.

Arcus reducere ad Peripheriam pro Tabula Occidentali.

- 28 **P**ro horis Cancrī, distantia Minoris gradibus 90. Altitudo Aequatoris subtrahitur Arcui Verticali (mutuo assumpto integro circulo gradibus 360. quam

Calculus Alitudinum, Vmbrarum, Azimuthorum,

Horæ	Distantiæ Grad. M.	Logarithmi	Altitud. Gr. M.	Vmbræ P. M.
24	115. 46	Logarith. compl. ad 180. gr. 64. m. 14. 995451 Logar. compl. declin. Solis gr. 23. m. 30. *996240 Summa, Logar. Alt. horæ 24. 25. & 70. 991692 Occid. & h. 12. 25. & 70 Orientalis. Hinc Arcus Peripheriæ hor. 24. 25 Occidentalis	55. 40	8. 12
23	100. 46	Logarith. compl. ad 180. gr. 79. m. 14. 999229 Logarithmus communis *996240 Summa, Logar. Alt. horæ 23. Occid. 993469 & 11. Orientalis 25; & 13. Orient. 70. Arcus itaque horæ 23. 25 Occidentalis est	64. 17	5. 46
22	85. 46	Logarithmus distantia grad. 85. m. 46. 999881 Logarithmus communis *996240 Summa, Logar. Alt. horæ 22. 25 Occid. 996121 & h. 10. 25 Orient. necnon 14. 70 Or. Ideo Arcus horæ 22. 25 Occidentalis est gr. 324.	66. 8	5. 19
21	70. 46	Logarithmus distantia 997506 Logarithmus communis *996240 Summa, Logar. Alt. hor. 21. 25 Occid. 993746 & horæ 9. 25 Orient. & horæ 15. 70 Or. Hinc Arcus horæ 21. 25 Occid. est grad. 252. m. 9.	59. 59	6. 56

Se-

do Arcus minor est Altitudine Aequatoris ;) & residuum erit Arcus Peripheria
questus .

29 Sin verò distantia fuerit maior gradibus 90. subtrahitur gradibus 360 tùm Ar-
cus ipse Verticalis ; tùm Altitudo Aequatoris : vel ista sola , quando Arcus est
Cyphra , seu , 0 .

30 Pro Capricorno ; si distantia fuerit minor gradibus 90. tùm Arcus , tùm
Aequatoris Altitudo subtrahitur gradibus 180 .

31 Si distantia fuerit maior gradibus 180. additur Arcus , & subtrahitur Altitu-
do Aequatoris . Et quando Arcus est Cyphra , subtrahitur nihilominus Aequato-
ris Altitudo .

32 Aequatoris horarum omnium Arcus , est Aequatoris eiusdem Altitudo , que
gradibus 90. subtrahenda est . Et hæc de regulis hætenus . Modò sequuntur om-
nium operationum exempla sub latitudine Poli gradibus 45. sumptis distantijs ho-
rarijs à Meridiano ex Tabella superioris capitis , prax.7. num.4.

& Arcuum utriusque Tabule, ac Tropici.

		Logarith. & Tomologar.
Logarithmus declinationis Solis Generalis grad.23.m.30.		960070
Tomologarithmus Altitudinis horæ 24. grad.55.m.40.		24872
Summa, Logarithmus secundus Azimuth grad.45. m.0. horæ 24. & Occidentalis. & horæ 12. & Orientalis.		984942
est gr.270. & horæ 24. & gr.90. hor.12. & Or.gr.0.m.0.h.12. & gr.180.		
Logarithmus Generalis		960070
Tomologarithmus Altitudinis grad.64. m.17.		36259
Summa, Logarithmus secundus Azimuth grad.23. m.14. horarum præ- dictarum , 23. Occidentalis .		996329
gr.291.m.46.horæ 11. & Or.gr.21.m.46.horæ 13. & Or.gr.201.m.46.		
Logarithmus Generalis		960070
Tomologarithmus Altitudinis grad.66.m.8.		39296
Summa, Logarithmus secundus Azimuth grad.9.m.46.		999366
m.46.horæ 10. & Orient.gr.54.m.46. & horæ 14. & Or.gr.234.m.46.		
Logarithmus Generalis		960070
Tomologarithmus Altitudinis grad.59.m.59.		30081
Summa, Logarithmus secundus Azimuth grad.37.m.9.		990151
horæ 9. & Orientalis grad.82.m.9.horæ 15. & Orient. gr.262.m.9.		

K

Se-

Sequuntur calculi Altitudinum, Vmbrarum, Azimuthorum,

Horæ	Distantiæ Grad. M.	Logarithmi	Altitud.		Vmbræ
			Gr. M.	P. M.	
20	55. 46	Logarithmus distantie	991738		
		Logarithmus communis	*996240		
		Summa, Logar. Altit. horæ 20. 25 Oc-	987978	49. 18	10. 19
		cidentalis, & horæ 16. 7 Orientalis.			
19	40. 46	Arcus igitur horæ 20. 25 Occidentalis est gr. 7.			
		Logarithmus distantie	981490		
		Logarithmus communis	*996240		
		Summa, Logar. Altit. horæ 19. 25 Oc-	977730	36. 47	16. 3
18	25. 46	cidentalis, & horæ 17. 7 Orientalis.			
		Eft igitur Arcus horæ 19. 25 Occidentalis gr. 15.			
		Logarithmus distantie	963820		
		Logarithmus communis	*996240		
17	10. 46	Summa, Logar. Altit. horæ 18. 25 Oc-	960060	23. 29	27. 37
		cidentalis, & 7 Orientalis.			
		Ideo Arcus horæ 18. 25 Occidentalis est gr. 19.			
		Logarithmus distantie	927140		
16	0. 46	Logarithmus communis	*996240		
		Summa, Logar. Altit. horæ 17. 25 Oc-	923380	9. 51	69. 7
		cidentalis, & 19. 7 Orientalis.			
		Arcus igitur horæ 17. 25 Occidentalis est gr. 21.			

33

Altitudinum, Vmbrarum, & Arcuum Aequatoris paradigma.

Horæ	Distantiæ Grad. M.	Altitudines		Vmbræ	
		Grad. M.	Grad. M.	P. M.	M.
12. Orientalis, & 24. Occidentalis.	90. 0	0. 0	0. 0	0. 0	
11. & 13. Orient. & 23. Occident.	75. 0	75. 0	0. 0	3. 13	
10. & 14. Orient. & 22. Occident.	60. 0	60. 0	0. 0	6. 56	
9. & 15. Orient. & 21. Occident.	45. 0	45. 0	0. 0	12. 0	
16. Orientalis, & 20. Occidentalis.	30. 0	30. 0	0. 0	20. 47	
17. Orientalis, & 19. Occidentalis.	15. 0	15. 0	0. 0	44. 47	

34 Ar.

De Arcuum utriusque Tabulae, ac Tropici.

	Logarith. & Tomologar.
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 49. m. 18.	18569
Summa, Logarithmus secundus Azimuth grad. 52. m. 18.	978639
m. 18. & horæ 16. 70 Orientalis grad. 277. m. 18.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 36. m. 47.	9642
Summa, Logarithmus secundus Azimuth grad. 60. m. 8.	969712
m. 8. & horæ 17. 70 Orientalis grad. 285. m. 8.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 23. m. 29.	3755
Summa, Logarithmus secundus Azimuth grad. 64. m. 14.	963825
m. 14. & horæ 18. 70 Orientalis grad. 289. m. 14.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 9. m. 51.	645
Summa, Logarithmus secundus Azimuth grad. 66. m. 8.	960715
m. 8. & horæ 19. 70 Orientalis grad. 291. m. 8.	

- 34 Arcus Equinoctialis pro omnibus horis, est eiusdem Altitudo supra Horizontem; ut in presenti exemplo, grad. 45.
 35 Reducitur autem ad Arcus Peripheria, si in Orientali addatur gradibus 270. unde fiet gradus 315. pro omnibus punctis Vmbrarum.
 36 At in Occidentali Altitudo Aequatoris subtrahenda est gradibus 90. & sic in presenti exemplo relinquetur Arcus omnibus horis communis grad. 45.

Exempla Tabularum.

TAbulas exemplares hic non apponimus, quia habentur infra lib. 2. quæ sunt duæ Tabulae penultima, num. 181. & 182.

Praxis V. Tabulas calculo exarare pro Horologijs Sciathericis Polaribus.

I Hic omnia supponimus, que de Sciatherico Polari diximus supra libro 2. capite 9. prime partis. Pro cuius ampliori explicatione, necnon illius Altitudinum, & Arcuum Azimuthalium calculo, ad proprias Tabulas Sciathericas conficiendas, Theoricum Diagramma adumbretur eiusmodi; in quo

HNOV, sit Meridianus loci, & Plani Gnomonici Polaris.

AB, Planum Gnomonicum Polare, de quo modo loquimur, transiens per utroque Polos; B, Borealem, & A, Australem; & per puncta Orientis, & Occidentis T; eleuatum super Horizontem loci, HO; grad. 45. quos metitur Arcus Meridiani, OB.

S, Locus Solis in principio Cancris, hora 18. Italica.

V, Vertex loci. Æ, Vertex Plani, AB, Polaris.

ÆSK, Quarta Verticalis cadens è Vertice Plani, AB, per corpus Solis, S; cuius etiam metitur cum Altitudinem SK, super Horizonte, AB, plani ipsius proprio; tum Arcum Azimuthalem BK, numeratum à Meridiano B, scilicet Boreali; vel TK, numeratum à puncto T, Ortus, & Occasus.

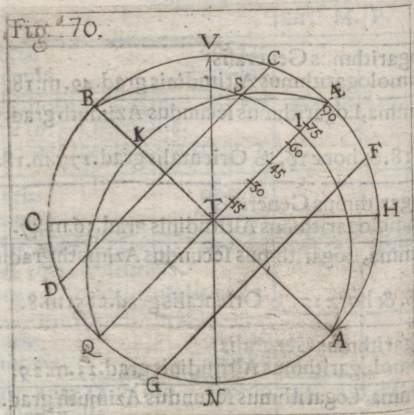
Cœtera eodem prorsus modo se habent, ac in Diagrammate superioris praxeos. Quibus positis, sit.

De Distantijs Horarijs.

2 Distantiæ supputantur ex Arcu Semidiurno, cuiuscumque paralleli propositi, accepto ad Altitudinem Poli Regionis, in qua delineandum est Sciathericum Polare; iuxta *praxim 7. capitis primi, huius libri*. Vnde Tabellæ distantiarum ibidem positæ, huic etiam calculo deferuiant; sub latitudine Poli grad. 45.

3 Cum autem Polaris Plani duæ sint superficies, nimirum superior, & inferior, seu Australis, & Borealis, notandum est, in superficie Australi, eas tan-

Fig. 70.



tum horas cadere, quarum distantie gradus 90. non excedunt; reliquas vero ad superficiem inferiorem, scilicet, Borealem spectare.

De calculo Altitudinum, Parallelorum extra Equatorem.

- 4 **P**roponatur exemplum Altitudinis horæ 18. Italicæ, Sole in principio Cancræ, cuius loci declinatio est grad. 23. m. 30. & distantia horaria ex Tabulacitate praxis 7. est grad. 25. m. 46.

In triangulo $\triangle I S$, rectangulo in I .

Dato $\left\{ \begin{array}{l} \text{Æ I, Arcu Equatoris, qui semper est distantia à Meridiano horæ} \\ \text{data (nunc) horæ 18. grad. 25. m. 46.} \end{array} \right.$

Crure $\left\{ \begin{array}{l} I S, \text{ declinatione Solis, (nunc) grad. 23. m. 30.} \end{array} \right.$

Quæritur *basis*, siue *hypotenusa* $\triangle S$, complementum $S K$, Altitudo Solis, hoc *Analogismo*.

Vt, Radius 100000. ad Sinum complementi declinationis Solis $S B$, gr. 66. m. 30. - 91706. Ita Sinus complementi cruris $\triangle I$, distantie horarie gr. 25. m. 46. - 90057. Ad 82588. Sinum Altitudinis Solis $S K$, grad. 55. m. 40. pro hora 18. Cancræ.

- 5 *Vel, Logarithmicè.*

Logarithmo compl. declinationis Solis grad. 66. m. 30. ——— 966240

Addatur Logarith. compl. distantie horæ 18. grad. 25. m. 46. ——— 995452

Colligitur Logarithmus Altitud. quæsitæ grad. 55. m. 40. ——— 991692

Monitum.

- 6 **S**ingulæ autem Altitudines paralleli Cancræ, horis etiam Capricorni distantie eiusdem deferuiunt. Vt Altitudo horæ 24. \varnothing , horæ 12. \circ : Altitudo horæ 23. \varnothing , horæ 13. \circ , &c.

Altitudines Equatoris.

- 7 **A**ltitudines Equatoris $\triangle T$, sunt Arcus distantie eiusdem ab Horizonte Plani $\triangle B$, ex T , in \triangle , numeratæ, gradibus 15. horis singulis attributis; ita, vt ad Meridianum vsque integrum quadrantem grad. 90. perficiant; quod numeri Diagrammatis ostendunt.

De Vmbris.

- 8 **V**mbra Methodo eadem supputantur, ac in cæteris. Vide prax. 9. cap. 1. huius libri.

De Arcibus Azimuthalibus in parallelis.

IN triangulo SKB, rectangulo in K.
 Datis { Basi SB, complemento declinationis Solis grad. 66. m. 30.
 Cruce SK, Altitudine Solis grad. 55. m. 40.
 Queritur Crux alterum KB, compl. Azimuth horæ 18.

Analogismus.

VT Radius 100000. ad secantem Altitudinis Solis SK, grad. 55. m. 40.
 177303. Ita declinationis Solis grad. 23. m. 30. Sinus 39875. Ad 70700.
 Sinum grad. 45. m. 0. Arcus Horizontalis horæ 18. Italica; numerati ex T,
 puncto Ortus, & Occasus; sicut reliqui omnes Arcus eiusmodi in præsent
 Sciatherico numerandi sunt.

Per Logarithmos.

Logarithmo declinationis Solis grad. 23. m. 30. ————— 960070
 Iungatur Tomologarithmus Altitudinis gr. 55. m. 40. ————— 24872
 Colligitur Logarithmus Azimuth grad. 45. m. 0. ————— 984942

Arcus Azimuthales Æquatoris.

Pro horis omnibus sunt duo puncta, Orientis nimirum, & Occiden-
 tis.

De horum Arcuum reductione ad Arcus Peripheria
pro superficie superiori.

IN Antemeridialibus { Cancrī { Azimuth { Aufer { grad. 90.
 { Capricornī { Azimuth { Adde { grad. 270.
 In Pomeridianis { Cancrī { Azimuth { Adde { grad. 270.
 { Capricornī { Azimuth { Aufer { grad. 90.
 Æquatoris Arcus omnes { Antemeridiem { sint grad. } 90.
 { Postmeridiem { sint grad. } 270.

Pro superficie verò inferiori.

Antemeridiem } Azimuthales Arcus } Adde { grad. } 270.
 Postmeridiem } Aufer { grad. } 90.

Quod Sciathericum Horologium Polare cum integro Meridiano planè coincidit.

ID clarè satis explicauimus libro secundo, cap. 9. primæ partis; & hac de causa huius Sciatherici Polaris speciales calculos, Tabulasque libenter o-mittimus. Si enim Horologium integrum (idest lineis horarijs, supra, & infra lineam Horizontalem protrahis) ex Tabula Horologij Meridiani Orientalis in plano Polari describatur; mutatis horarum tantum numeris, & ordine, vt in citato capite docuimus, erit idem exactè Polare.

Praxis VI. De Polari communiter dicto, scilicet declinante à Meridiano, describendo.

IN superioris partis lib. 2. cap. 9. duplex innuimus esse planum Polare; vnum sic dictum, quasi Antonomastice, quod scilicet per vtrosque Polos, & per puncta Ortus, & Occasus transit; & ad Meridianum rectum est; de cuius Horario egimus in præcedenti praxi, num. 12. alterum quod quidem per vtrosque Polos transit; non tamen per puncta Ortus, & Occasus; nec ad Meridianum rectum est, sed ab ipso, Ortum, vel Occasum versus, declinat; de quo loquimur in præsentia.

2. Si tale itaque planum Polare declinet ad Ortum, ac Sciathericum in eius facie superiori construendum fuerit; gradus declinationis Arcui Semidiurno Cancræ, Regionis, addantur; subtrahanturque si declinatio sit ad Occasum. Idemque seruetur cum Arcu Semidiurno Equatoris grad. 90.

3. Tum ex hac Summa, vel Differentia conficiantur distantie horariae, iuxta præcepta praxis 7. capitis primæ huius libri.

4. Tertiò, supputentur Altitudines, & Arcus Horizontales illarum tantum horarum, quarum distantie, Arcum Semidiurnum Equatoris grad. 90. non excedunt; & pro Antemeridianis, Pomeridianisque intelligantur illae horae, quæ sunt ante, vel post lineam substylarem.

Exemplum.

Propositum sit construendum Sciathericum in plano Polari declinante ad Ortum grad. 30. sub Altitudine Poli grad. 45. sic proceditur.

T A.

TABELLA DISTANTIARVM HORARVM pro allato exemplo.

Hora	115. 46	Arcus Semidiur.	Hora	Arcus Semidiur.	Aquat. 90	Hora
65	30. 0	Declin. Or. Plani	70	Declinatio Orient. Plani	30	75 & 80
24	145. 46		8		120	24
23	130. 46		9		105	23
22	115. 46		10		90	22
21	100. 46		11		75	21
20	85. 46		12		60	20
19	70. 46		13		45	19
18	55. 46		14		30	18
17	40. 46		15		15	17
16	25. 46		16		15	16
15	10. 46		17		30	15
			18		45	14
14	4. 14		19		60	13
13	19. 14		20		75	12
12	34. 14		21		90	11
11	49. 14		22		105	10
10	64. 14		23		120	9
9	79. 14					

*Altitudines, Vmbrae, & Arcus Azimuthales Cancrī,
Æquatoris, & Capricorni supputare.*

6 **H**æc omnia iisdem exantlantur Analogismis, atque in superiori præxi.

*Exemplum Altitudinis, & Vmbrae horæ 18. Cancrī
in dato plano declinante ad Ortum gr. 30.*

7 **I**ngantur Logarithmus secundus declinationis Solis maximæ gr. 23. m. 30. — 996240
Et Logarithmus complementi distantiae horæ 18. gr. 55. m. 46. — 975017
Colligitur Logarithmus Altitud. quæsitæ gr. 31. m. 3. V. 19 56. — 971257

Exemplum Altitudinis, & Vmbrae horæ 18. Capricorni.

8 **L**ogarithmus secundus declinationis Solis grad. 23. m. 30. — 996240
Logarithmus secundus distantiae horæ 18. gr. 4. m. 14. — 999881
Colligitur Logarithmus Altit. horæ 18. gr. 66. m. 9. V. 5. 18. — 996121
Excm.

Exemplum Altitudinis, & Vmbra hora 18.

Æquatoris.

Altitudo Æquatoris est complementum distantia eiusdem. Ideo hora 18. Altitudo, est grad. 60. nempe complementum distantia grad. 30. Vmbra autem respondens Altitudini grad. 60. est P. 6. m. 56.

Exemplum Azimuth hora 18. Cancr.

Logarithmus declinationis Solis grad. 23. m. 30. ————— 960070
 Tomologarithmus Altitudinis hora 18. grad. 31. m. 3. ————— 6716
 Colligitur Logarithmus Azimuth hora 18. dictæ, gr. 27. m. 44. ————— 966786
 Cui adde ————— grad. 270. m. 0.
 Constat Arcus eiusdem ————— grad. 297. m. 44.

Exemplum Azimuth hora 18. Æquatoris.

Quoniam hora 18. Æquatoris hic est Pomeridiana; ideo Arcus eius Azimuthalis erit grad. 270.

Exemplum Azimuth hora 18. Capricorni.

Logarithmus declinationis Solis maximæ grad. 23. m. 30. ————— 960070
 Tomologarithmus Altitudinis hora 18. grad. 66. m. 9. ————— 39325
 Colligitur Logarithmus Azimuth hora 18. grad. 80. m. 27. ————— 999395
 Quo deducto è gradibus ————— 270. m. 0.
 Relinquitur Arcus hora prædictæ graduum ————— 189. m. 33.

Exemplum Tabula Gnomonica pro tribus punctis prædictis hora 18.

	Tropicus Cancrī		Æquinoctialis		Tropicus Capricor.	
	Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra
Horæ	Grad. M.	P. M.	Grad. M.	P. M.	Grad. M.	P. M.
18	1297. 44.	19. 56.	1270. 0.	6. 56.	1189. 33.	5. 18.

VM

Horæ	
20	24
15	23
10	22
5	21
0	20
30	19
25	18
20	17
15	16
10	15
5	14
0	13
30	12
25	11
20	10
15	9

ancr.

rioni præ-

ancr.

gr.

— 996240
 — 975017
 — 971357

icorni.

— 996240
 — 999881
 — 996121

Excm.

Praxis VII. De Sciathericis Aequinoctialibus.

1 **A**Equinoctialium Sciathericorum descriptio Geometrica, quam lib. 2. cap. 10. partis primæ, adumbravimus, est quidem exacta, facilis, ac delectabilis; Verum, quo ad modum operandi expeditior, exactior, & securior euadit adminiculo Peripheriæ; ideo hanc Methodum existimaui omitterendam non esse.

De Altitudinibus, & Vmbris.

2 **P**roposito quocumque Solis parallelo delineando in planis Aequinoctialibus, vnica erit Altitudo, ac proinde Vmbra itidem vnica, pro horis omnibus eiusdem paralleli; quippe declinatio illius ab Aequatore.

Exempli causa. Parallelorum, siue Tropicorum Cancræ, & Capricorni Altitudo est grad. 23. m. 30. quanta est eorum declinatio, Vmbra verò P. 27. m. 36. & paralleli initiorum Tauri, & Scorpionis Altitudo est grad. 11. m. 30. Veluti declinatio; Vmbra P. 58. m. 59. Vnde vnica circini diuicatione, quilibet parallelus, è centro Gnomonico describi poterit.

3 Declinationes autem Signorum ad singulos gradus habentur lib. 2. primæ partis, in prima praxi, cap. 6.

De Arcubus Azimuthalibus.

4 **A**zimuthales Arcus omnium, & cuiuscumque generis horarum, in quouis parallelo, est earum distantia à Meridiano, supputata iuxta præcepta praxi 7. cap. 1. huius libri; sumptis Arcubus Semidiurnis sub Altitudine Poli Regionis, in qua construendum est horarium.

Exempli gratia. Arcus Azimuthales Tropici Cancræ sub Altitudine Poli grad. 45. sunt distantie, quæ habentur capite, & praxi modo citatis. Itemque parallelus Cancræ deferuit etiam Capricorno, iuxta respondentiam horarum.

Quomodo distantie reducantur ad Arcus Peripheriæ.

5 **D**istantia omnes Pomeridianæ cum Arcubus Peripheriæ coincidunt: Antemeridianæ verò, subtractæ gradibus 360. relinquunt Arcus quæsitos, pro Sciatherico Superiori; pro Inferiori autem è conuerso. Hinc horæ 24. Cancræ Arcus Peripheriæ, est eiusdem horæ distantia à Meridiano grad. 115. m. 46. Horæ 23. grad. 100. m. 46. &c.

Quod

*Quod pro descriptione horarum præter distantias Tropico-
rum, requiruntur distantia alterius paralleli
Æquatori viciniore.*

ID omnino manifestum est; siquidem hoc in Sciatherico duo Tropici in
vnum coincidunt, BECD; at pro delineatione cuiuslibet lineæ hora-
ria duo saltem requiruntur puncta. Erit igitur alterum Tropici Cancrī; al-
terum paralleli viciniore Æquatori; qualis est principij Tauri, siue cuius-
cumque gradus ipsius Arietis, & Libræ; non tamen initij; cuius cum nul-
la sit declinatio, Vmbra foret infinita; proindeque ad horas *Italicas*, & *An-*
tiquas indicandas prorsus inepta.

7 Cum distantijs itaque Cancrī, quæ habentur in Tabella *praxis 7. cap. primi*
huius libri, assumemus distantias initij Tauri, cuius Arcus Semidiurnus sub
latitudine Poli grad. 45. per *praxim 3. capitis primi huius libri*, est grad. 101. m.
44. Declinatio ex Tabula *prax. 1. cap. 6. lib. 2. primæ partis*, grad. 11. m. 30. Vm-
bra P. 58. m. 59. Ex quibus talem construximus Tabulam.

TABVLA HOROLOGII ÆQVINOCTIALIS ITALICI
Ad latitudinem Poli grad. 45.

Horæ	Cancrī		Tauri	
	Arcus Grad. M.	Vmbra P. M.	Arcus Grad. M.	Vmbra P. M.
24	115. 46	27. 36	101. 44	58. 59
23	100. 46		86. 44	
22	85. 46		71. 44	
21	70. 46		56. 44	
20	55. 46		41. 44	
19	40. 46		26. 44	
18	25. 46		11. 44	
17	10. 46		356. 44	
16	355. 46		341. 44	
15	340. 46		326. 44	
14	325. 46		311. 44	
13	310. 46		296. 44	
12	295. 46		281. 44	
11	280. 46		266. 44	
10	265. 46		251. 44	
9	250. 46		236. 44	

Praxis VIII. Sciathericum Irregulare construere in superficie declinanti à Meridiano, super quam cleuatur Polus Horizontalis, & Cælum, Terranue respicit.

- 1 **P**rimùm, per Altipolarium libri primi primæ partis, cap. 2. prax. 7. Epifig. 2. exploretur Altitudo Poli, supra Planum.
 Secundo, tria supputentur Inuenta.
 Tertio, conficiantur distantie horariæ.
 Quarto, inueniantur Altitudines, Vmbra, Azimuth, &c.

Data Altitudine Poli supra planum tria Inuenta praequisita supputare.

- 2 **P**onatur construenda Tabula Gnomonica pro Superficie, cui Polus emineat grad. 30. declinante à Meridie in Ortum grad. 50. sub Altitudine Poli Regionis grad. 45.
Inuentum primum eadem venabimur Analogia, qua supra cap. 1. prax. 10. huius libri, Azimuth, extra Aequatorem indagare docuimus.
 Iungantur enim Logarithmus Altit. Poli supra Planum gr. 30. --- 969897
 Et Logarithmus secundus declinationis Muri gr. 50. --- 980807
 Colligitur Logarithmus Inuenti primi grad. 18. m. 45. --- 950704
Pro Inuento secundo iungantur
 Logarithmus secundus Altitudinis Poli, supra Planum gr. 30. --- 993753
 Tomologarithmus Inuenti primi gr. 18. m. 45. --- 2368
 Colligitur Logarithmus secundus Inuenti secundi gr. 23. m. 51. --- 996121
Pro Inuento tertio iungantur
 Logarithmus Inuenti secundi grad. 23. m. 51. --- 960675
 Tomologarithmus secundus Altit. Poli supra Planum gr. 30. --- 30103
 Colligitur Logarithmus Inuenti tertij grad. 54. m. 1. --- 990778

Dato Inuento tertio, angulos horarios, siue distantias horarias componere.

- 3 **S**umpto Arcu Semidiurno ad Altitudinem Poli Regionis (in presenti exemplo grad. 45.) & eidem addito Inuento tertio, constituuntur distantie horariæ, eadem prorsus Methodo, qua supra in praxi 3. num. 7.
 Terminantur autem distantie huiusmodi, Arcu Semidiurno, sumpto ad latitudinem Poli Superficie, quæ Altitudo (in presenti, vt pote Horizontalis) est Inuentum primum grad. 18. m. 45. & rotundè grad. 19. cuius Arcus Semidiurnus Cancræ, est grad. 98. m. 36. & Capricorni grad. 81. m. 24.

TABELLA DISTANTIARVM HORARIARVM
pro dato exemplo.

Horæ ♂	115. 46. Arcus ♂ 54. 1. Inuent. 3.	90. 0. Arc. Æq. 54. 1. Inuent. 3.	Horæ ♀ & ♂	64. 14. Arcus ♀ 54. 1. Inuent. 3.	Horæ ♀
24	169. 47	144. 1	24	118. 15	24
23	154. 47	129. 1	23	103. 15	23
22	139. 47	114. 1	22	88. 15	22
21	124. 47	99. 1	21	73. 15	21
20	109. 47	84. 1	20	58. 15	20
19	94. 47	69. 1	19	43. 15	19
18	79. 47	54. 1	18	28. 15	18
17	64. 47	39. 1	17	13. 15	17
16	49. 47	24. 1	16	1. 45	16
15	34. 47	9. 1	15	16. 45	15
14	19. 47	5. 59	14	31. 45	14
13	4. 47	20. 59	13	46. 45	13
12	10. 13	35. 59	12	61. 45	12
11	25. 13	50. 59	11	76. 45	11
10	40. 13	65. 59	10		
9	55. 13	80. 59	9		
8	70. 13				
7	85. 13				

*Altitudines horarum inuenire, Sole in principio Tropico-
rum existente, quæ Methodus reliquis etiam omnium
parallelorum punctis deservire poterit.*

4 **C**asus quivis propositus reducendus est ad illum ex tribus explicatis
(supra in prax. 8. cap. 1. huius libri) quem triangulus postulat ibidem
expensus; ac in cæteris prosequendum, iuxta casus eiusdem præcepta.
Exemplum. In casu hic proposito, quia latera trianguli horarij simul qua-
drantem excedunt; ideo in calculo Altitudinum procedendum est iuxta
tertij casus præceptionem num. 16. citata praxeos. Latus enim BV (in figura
ibi exposita) scilicet complementum Inuenti primi, siue Altitudinis Poli su-
perficialis, est grad. 71. m. 15. & latus BM, grad. 66. m. 30. Quamobrem Al-
titudinum calculus ita erit disponendus.

CAL-

CALCVLI FORM A.			IG.	M. I	Sinus
Altitudo Æquatoris Plani			1	71. 151	
Declinatio Solis in Tropiciis			1	23. 301	
Aggregatum, cuius Sinus est Inuentum I.			1	94. 451	99657
Differentia,			1	47. 451	74022
Sinum aggregatum			1		173679
Aggregati Semissis, Inuentum II.					86839
Idem sublatum ab Inuento I, Inuentum III.			1	1	12818
5 Modò quærat, <i>exempli causa</i> , Altitudo horæ 16. Cancr, cuius distantia est grad. 49. m. 47. lungantur.					
Logarithmus Inuenti secundi Generalis					993869
Logarithmus secundus distantia grad. 49. m. 47.					981002
Colligitur Logarithmus					974871
Huius Logarithmi Sinus est					56064
Cui si addatur Inuentum tertium					12818
Fit Sinus Altitudinis horæ 16. Cancr grad. 43. m. 32.					68882
Eiusque Vmbra P. 12. m. 38. more solito inuenta ex praxi 9. capitis primi huius libri.					
6 Deinde quærat Altitudo eiusdem horæ 16. in Capricorno, cuius distantia à Meridie est grad. 1. m. 45. sic.					
Logarithmus Generalis					993869
Logarithmus secundus distantia grad. 1. m. 45.					999980
Logarithmus Summa					993849
Cui respondet Sinus					86791
A quo subtracto Inuento tertio					12818
Relinquitur Sinus Altitudinis quæsita grad. 47. m. 42.					73973
Cuius Vmbra, est P. 10. m. 55.					
7 Tertiò, quæritur Altitudo eiusdem horæ 16. in Æquatore, cuius distantia, est grad. 24. m. 1. Sic,					
Logarithmus Altitudinis Æquatoris in data superficie, (quæ est gr. 71. m. 15.) omnibus horis communis					997632
Logarithmus secundus distantia horæ 16. gr. 24. m. 1.					996007
Logarithmus Altitudinis quæsita gr. 59. m. 52. Vmbra P. 6. m. 58.					993699
<i>Data Solis Altitudine, & angulo horario Arcus Azimuthales indagare.</i>					
8 A Zimutha hinc etiam iisdem acquires Analogismis, ac in prax. 10. cap. 1. huius libri dictum est.					
<i>Exemplum. 1. Quærat Azimuth horæ 16. Capricorni, cuius modò Altitudinem inuenimus grad. 43. m. 32. Sic procedes.</i>					

Lo.

L ogarithmo complementi declinationis Solis in φ , communis--	996240
Logarithmus Anguli horæ 16. grad. 49. m. 47. ---	988287
Tomologarithmus Altitudinis grad. 43. m. 32. ---	13968
Logarithmus Azimuth grad. 75. m. 0. Arcus grad. 261. m. 9. ---	998395
<i>Exemplum. 2.</i> Queritur Azimuth horæ 16. γ , cuius Altitudo modò inuenta, est grad. 47. m. 42.	
Logarithmus communis ---	996240
Logarithmus anguli, siue distantie, grad. 1. m. 45. ---	848485
Tomologarithmus Altitudinis grad. 47. m. 42. ---	17198
Logarithmus Azimuth gr. 2. m. 23. Arcus grad. 153. m. 46. ---	861823
<i>Exemplum. 3.</i> Queritur Azimuth horæ 16. \AA quatoris, cuius Altitudo, est grad. 59. m. 52.	
Logarithmus anguli horarj grad. 24. m. 1. ---	960960
Tomologarithmus Altitudinis grad. 59. m. 52. ---	29928
Logarith. Azimuth quæsitigr. 54. m. 10. Arcus gr. 210. m. 19. ---	990888

Azimuth in Arcus Peripheria conuertere.

- ⁹ **P**rimum, si opus fuerit, ex praxi 1. cap. 2. huius libri, queratur distantia Verticalis, quæ tamen in præfenti exemplo; cum Altitudo \AA quatoris sit maior grad. 66. m. 30. nempe grad. 71. m. 15. non est necessaria. Deinde sequentes feruentur canones.

Pro declinantibus ad Ortum.

- ¹⁰ **I**n horis Cancræ ante lineam styli, quarum distantia maior est distantia Verticali, Azimuthis subtrahitur Inuent. II. & cum nequit fieri subtractio, mutuo asimitur circulus integer grad. 360. & residuum erit Arcus Peripherie.
- ¹¹ Si horarum distantia fuerit minor Verticali, aggregatum ex Azimutho, & Inuento Secundo aufertur gradibus 180.
- ¹² Post verò lineam styli, si horæ fuerint distantie minoris, Azimuthis adduntur gradus 180. & aggregato subtrahitur Inuentum II.
- ¹³ Sin autem distantia maioris; Azimutha, & Inuentum II. auferuntur gradibus 360.
- ¹⁴ Et cum omnes ante, & post lineam styli sunt maioris, aut minoris distantie, quam Verticalis, quod dictum est de singulis, de omnibus intelligitur.
- ¹⁵ Pro horis \AA quatoris, & Capricorni, ante lineam styli, aggregatum ex Azimutho, & Inuento II. aufertur gradibus 180.
- ¹⁶ Post verò lineam styli, Azimutho adduntur gradus 180. & aggregato subtrahitur Inuentum II.

Sinus

99657

74022

173679

86839

12818

Distantia est

993869

981002

974871

4

8

2

Distantia primi

993869

999980

993849

86791

12818

73973

is

ft

997632

996007

993699

us

10. cap. I.

modò Alti.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Lo.

Pro declinantibus ad Occasum.

- 17 **O**Mnia peragantur, ut in declinantibus ad Ortum; præter quam quod *Inuentum II.* semper additur, & abiectis gradibus 360. (cum summa hunc numerum excedit) residuum erit Arcus Peripheriæ quæsitus.
- 18 Sequitur exemplum Tabulæ in tribus prædictis punctis horæ 16. pro declinante ad Ortum grad. 50. sub Altitudine Poli superficialis grad. 30. & Regionis grad. 45.

		Tropicus Cancr. I		Æquinoctialis		Tropicus Capricor.						
Horæ	Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra						
	Grad. M.	P. M.	Grad. M.	P. M.	Grad. M.	P. M.						
16	1261.	9.	12.	38.	1210.	19.	6	58.	153.	46.	10.	55

- 19 Cætera, quæ hic non explicantur, *praxis 3. huius libri* suppeditabit.

Praxis I X. Sciathericum Horologium Irregulare construere in plano declinante, super quod eleuatur Polus Verticalis.

- 1 **S**I datum planum, aut superficies, quæ per Altipolarium *prax. 7. c. 2. Epifag. 2. libri primi, partis primæ*, reperiatur subesse Altitudini Poli Verticalis; necnon per declinatorium à Meridiano loci declinationem habere. Inueniantur primum tria illa inuenta, quæ in *praxi superiori* explicauimus. Deinde reliquæ peragantur operationes, quæ ad integram Tabulam conficiendam requiruntur; iuxta præcepta *praxis 3. huius libri*.
- 2 Tabulæ autem istæ muris tum Meridionalibus, tum Aquilonaribus deferuient; etiam pro horis *Babylonicis*; ut ibidem docuimus de Regularibus. Ita tamen, ut in Meridionale sursum eleuetur, *exempli causa*, grad. 10. totidem Aquilonare deprimatur deorsum.

Libri Primi Secunda Partis Finis.

SYNOPSIS
GNOMONICES BIFORMIS
PARTIS SECUNDÆ TABULARIS,
LIBER SECVNDVS;

Cuius

PARS PRIOR *Tabularum Gnomonicarum rsum, iuxta Methodum
D. Ioannis Paduanij, scilicet, per Peripheriam, & Regulam;*

POSTERIOR *Tabulas ipsas Gnomonicas CLXXXIV. seu potius CCCLXVIII.
Pro Delineandis Sciathericis Italicis, & Babylonis, seu ab Occasu, & ab Ortus;
A Meridie, & a Media nocte, siue Astronomicis; necnon Antiquis, seu Planetarijs,
& Indaicis; Tum Horizontalibus, & Verticalibus directis; Tum Declinantibus
à Meridie, & à Borea, ad singulos gradus Declinationis, sub latitudine Poli grad.
45. m.o. supputatas continet.*

*Quæ ideo locis, & Ciuitatibus quamplurimis, in eodem circiter Parallelo,
per Europam, Asiam, & Americam existentium deseruiunt;
vt statim versa pagina, Catalogus indicat.*

*Singulis autem Tabulis propria Sciathericorum ab Occasu adiecta sunt
Diagrammata Chalcographica.*

SYLLOGEO
AVGVSTINO A' PVTEO
I. V. D. AC MATESIPHILO.



VENETIIS, Typis Antonij Bosij, M.DC.LXXIX.

SVPERIORVM PERMISSV.

SYNOPSIS
GNOMONICES BIFORMIS
PARTIS SECUNDAE TABULARIS
LIBER SECUNDVS

PARS PRIOR TABULARIS Gnomonice biformis, in qua
D. Joannis Tabularis, Joannis, per Tabularis, & Regulas;
POSTERIOR TABULARIS Gnomonice biformis, in qua
D. Joannis Tabularis, Joannis, per Tabularis, & Regulas;
TABULARIS Gnomonice biformis, in qua
D. Joannis Tabularis, Joannis, per Tabularis, & Regulas;
TABULARIS Gnomonice biformis, in qua
D. Joannis Tabularis, Joannis, per Tabularis, & Regulas;

SYLLOGO
AVGVSTINO APTEO
T. V. D. AC MATHEMATICO.



VENETIS, Typis Antonii Boldi, MDCLXXIX
ANTONIO BOLDI, PROPRIETARIO

M
Cum
D
rit,
fui
si, ut
diuer
de in
monst
omni
putan
ingen
forma

MONITVM AD LECTOREM



*Enigne Lector hic te rursus admonitum
velim, vt si quid erratum, siue in Tabu-
lis, siue in Descriptionibus Horologiorum,
in calce Tabularum, in tui commodum,
adiectis, inuenies, pienti animo accipias.*

*Cum enim mihi Tabulas propria manu calculo exarare,
& Diagrammata Sciathericorum delineare non vacaue-
rit, prae monstratis praeceptis, aliena opera vt compulsus
fui. Neque in ipsis Diagrammatis aliud consilij habui, ni-
si, vt locus styli, in quo Peripheria centrum figeretur, pro
diuersitate Horologij describendi innotesceret; qui proin-
de in linea Horizontali, HO, semper hoc signo (O) de-
monstratur. Cæterum mihi satis fuit, nouam Methodum,
omnium breuissimam, & facillimam, has Tabulas sup-
putandi, in libro superiori promouisse; quatuor adhibito
ingenio, & opere, spharmata corrigere, omnia melius ef-
formare, ac perficere poteris. Vale.*

CATALOGVS

LOCORVM, ET CIVITATVM,

*Quibus absque sensibili errore sequentes Tabulae
Gnomonicae deferuire possunt.*

	Alt. Poli. Grad. M.
A Quileia	45. 12
Aqui nella Liguria	44. 33
Albanella Liguria	44. 36
Alessandria in Lombardia	44. 44
Ambrum in Linguadocca	44. 38
Angea del Lago Maggiore	45. 27
Angoulême in Guascogna	45. 20
Argenta sotto Ferrara	44. 38
Asti nel Piemonte	44. 42
Bagnacavallo in Romagna	44. 31
Bardi nella Liguria	44. 33
Bassignano nella Liguria	44. 53
Bergerac in Francia	44. 40
Biron in Francia	44. 29
Bologna in Romagna	44. 30
Bondeno nel Ferrarese	44. 51
Bordeos in Guascogna	44. 50
Borgo S. Donino in Lombardia	44. 47
Bozolo in Lombardia	45. 4
Brescia in Lombardia	45. 32
Brianzon nel Delfinato	44. 48
Bussetto	44. 55
Budrio nell'Emilia	44. 50
Carmagnola nel Piemonte	44. 39
Carpi in Lombardia	44. 48
Casale nel Monferrato	44. 54
A Quileia.	
Aque Statiella.	
Alba Pompeia.	
Alexandria, Liguria.	
Ebrudunum.	
Angleria.	
Inculisma.	
Hasse Pompeia.	
Tiberiacum.	
Bardium.	
Augusta Bacionorum.	
Bergeriacum.	
Biro.	
Bononia, vel Felsina.	
Bondicomago.	
Burdigala.	
Fidentia.	
Bossolum.	
Brixia.	
Brigantium.	
Buxetum.	
Butrium.	
Carmeniola.	
Carpia.	
Casale Montisferrati.	

Ca-

S
M,

Alt. Poli.
Grad. M.

45. 12
44. 33
44. 36
44. 44
44. 38
45. 27
45. 20
44. 38
44. 42
44. 31
44. 33
44. 53
44. 40
44. 29
44. 30
44. 51
44. 50
44. 47
45. 4
45. 32
44. 48
44. 55
44. 50
44. 39
44. 48
44. 54

Ca-

Casal Maggiore in Lōbardia	<i>Casale Maius.</i>	44. 57
Castel Franco nell'Emilia	<i>Forum Gallorum.</i>	44. 32
Castel Guelfo nell'Emilia	<i>Castrum Vuelphonum.</i>	44. 32
Castel Guelfo di Lombardia		44. 46
Castiglione delle Stiviere	<i>Castilio Stiuerorum.</i>	45. 24
Cento nel Ferrarese	<i>Centum.</i>	44. 39
Cherso Isola della Liburnia	<i>Crespa, vel Crexa.</i>	45. 23
Comacchio nel Ferrarese	<i>Comacula, vel Comaculum.</i>	44. 42
Correggio nel Modonese		44. 47
Crema in Lombardia	<i>Crema.</i>	45. 16
Cremona in Lombardia	<i>Cremona.</i>	45. 1
Darentaria in Sauoia	<i>Tarentaria.</i>	45. 25
Defenzan in Lombardia	<i>Digentiacum.</i>	45. 29
Equillon in Guascogna	<i>Aquilonium.</i>	44. 55
Embrum nel Delfinato	<i>Ebrodunum.</i>	44. 38
Este in Lombardia	<i>Ateste.</i>	45. 21
Faenza in Romagna	<i>Faentia.</i>	44. 33
Fasso Città di Ponto	<i>Phasis.</i>	44. 46
Ferrara in Lombardia	<i>Ferraria.</i>	44. 54
Finale nel Modonese	<i>Finarium.</i>	44. 46
Forlì in Romagna	<i>Forum Liuij.</i>	45. 17
Fornouo nel Parmegiano	<i>Forum Neuij.</i>	44. 38
Gap nel Delfinato	<i>Vapinum.</i>	44. 38
Genoua nella Liguria	<i>Ianua, & Genua.</i>	44. 27
Granoble nel Delfinato	<i>Granatopolis.</i>	45. 11
Inurea nel Piemonte	<i>Eporadia.</i>	45. 17
Isola della Scala	<i>Insula Scaligerorum.</i>	45. 20
Limoges in Francia	<i>Lemouicum.</i>	45. 30
Mantoua in Lombardia	<i>Mantua.</i>	44. 11
Medicina nell'Emilia	<i>Meditrina.</i>	44. 34
Messarano in Piemonte	<i>Messaranum.</i>	45. 17
Milano in Lombardia	<i>Mediolanum.</i>	45. 14
Mirandola in Lombardia	<i>Mirandula.</i>	44. 54

Mo-

34

Modona nell'Emilia	Mutina.	44. 38
Monfelice in Lombardia	Mons Silicum.	45. 22
Montagnana in Lombardia	Mons Aneanus.	45. 12
Montignac in Francia	Montiniacum.	44. 54
Montmelian in Savoia	Mons Melianus.	45. 28
Nizza della Paglia	Nicea Insubrum.	44. 37
Nonantola in Lombardia	Nonantula.	44. 41
Nouara nell'Insubria	Nouaria.	45. 10
Nouellaria in Lombardia	Nouellaria.	44. 43
Orillac in Francia	Auriliacum.	45. 16
Ostilia in Lombardia	Hostilia.	45. 5
Padoua in Lombardia	Patanium.	45. 31
Pamiers in Guascogna	Pamia.	44. 39
Parenzo nell'Istria	Parentium.	45. 34
Parma in Lombardia	Parma.	44. 44
Pauia in Lombardia	Ticinum, vel Papia.	44. 58
Penderachi di Bitinia	Heraclea.	45. 5
Perigux in Francia	Petrogorium.	45. 4
Piacenza in Lombardia	Placentia.	44. 52
Picighittone in Lombardia	Picileo.	45. 3
Pinarolo nel Piemonte	Pinareolum.	44. 42
Pola d'Istria	Pietas Iulia.	45. 20
Reggionell'Emilia	Regium Lepidi.	44. 43
Roueredo nella Lombardia	Roboretum.	44. 53
Rouigo in Lombardia	Rhodigium.	45. 8
Sabioneda in Lombardia	Sabuloneta.	45. 0
Saluzzo nella Liguria	Salina.	44. 30
Samarkanda in Tartaria		45. 0
Sarlat in Guascogna	Sarlatum.	44. 45
Sassuolo nel Modonese	Saxulum.	44. 32
Sauigliano nel Piemonte	Sauilianum.	44. 30
Signia nell'Istria	Simia.	45. 32
Susa d'Italia nell'Alpi	Segusium.	44. 47

To.

Torin
Torto
Tour
Valen
Varal
Venet
Verce
Veron
Vesule
Vienn
Viada
Vicen
Vigeu
Voghe
Zara N

F
mun
nun
den

44. 38	Torino nel Piemonte	<i>Taurinum</i>	44. 49
45. 22	Tortona della Liguria	<i>Dertona.</i>	44. 45
45. 12	Tournon in Francia	<i>Turnonum.</i>	45. 0
44. 54	Valencè in Francia	<i>Valentia Gallica.</i>	44. 58
45. 28	Varallo nell'Insubria	<i>Varallum.</i>	45. 30
44. 37	Venetia d'Italia	<i>Venetia.</i>	45. 33
44. 41	Vercelli nell'Insubria	<i>Vercelle.</i>	45. 3
45. 10	Verona in Lombardia	<i>Verona.</i>	45. 33
44. 43	Vesulo Monte nell'Alpi	<i>Vesulus.</i>	44. 35
45. 16	Vienna del Delfinato	<i>Vienna Allobrogum.</i>	45. 32
45. 5	Viadana in Lombardia	<i>Viellianum.</i>	44. 55
45. 31	Vicenza in Lombardia	<i>Vincentia.</i>	45. 39
44. 39	Vigevano nell'Insubria	<i>Vigeanum.</i>	45. 6
45. 34	Voghera della Liguria	<i>Vicus Irie.</i>	44. 58
44. 44	Zara Nuoua	<i>Iadera Noua.</i>	44. 34

His locis addi possunt, Bergamum, Burgos Hispaniæ, Comum, Concordia, Forum Iulij, Geneua Sabaudia, Lugdunum Gallia, Niuers, Taruifium, Tergestum (*Trieste*), Tridentum, & alij plerique.



INDEX PRAXEVM

Pro vsu Tabularum sequentium.

P Praxis I. Peripheriam, & Regulam ad vsum Tabularum Gnomonicarum sequentium construere, & longitudinem styli determinare. pag. 1

Praxis II. De vsu, & applicatione Generali Peripherie, & Regule iam constructe; seu fili loco Regule. 3

Praxis III. De Descriptione Sciatherici Italici, siue Horarum ab Occasu, per Tabulas; & Monitum de Chalcographicis figuris Sciathericorum. 3

Quid agendum sit, quando alicuius horæ Italicæ non nisi unicum punctum in Tabulis Gnomonicis reperitur. 5

Quomodo Sciathericum transferri possit in Planum propositum, si illud prius delineatum fuerit in charta. 5

Quenam lineæ, præter horarias, in planis Conotomis delineandæ sint apparentes; quæue post Sciatherici descriptionem abolendæ. 6

Praxis IV. Sciatherica Babylonica, seu horarum ab Ortus, ex iisdem Tabulis Gnomonicis delineare. 6

Praxis V. Sciatherica Astronomica, siue horarum à Meridie, & à Media nocte per easdem Tabulas depingere; & de earum parallelis. 7

Praxis VI. Quid agendum sit, quando pro descriptione horarum Astronomicarum, seu à Meridie, & à Media nocte, vel ob loci angustias, vel quia nimis remotum sit, centrum horarum ipsarum haberi non potest; & quando horæ Italicæ unicum tantum punctum habent. 7

GNO.

GNOMONICES BIFORMIS

PARTIS SECVNDÆ TABVLARIS.

LIBER SECVNDVS.

De Praxibus pro vsu Tabularum Gnomonicarum, quæ in
hoc Secundo Libro continentur.

*Praxis 1. Peripheriam, & Regulam, ad vsum Tabula-
rum Gnomonicarum sequentium construere; &
longitudinem styli determinare.*



X lamina subtiliori, metallica, aut ex crassiori papyro ab-
scindatur circuli Peripheria, vno digito lata; & in gradus
360. continuos diuisa; veluti, A C B D; cuius explicatio pat-
tet supra *prax. 1. cap. 2. superioris libri.*

Gradus in Peripheriæ lyngo excisi duplici ordine numero-
rum notentur, *exteriori*, scilicet, & *interiori*. Ordo nume-
rorum exteriorum initium sumat ex B, per C, A, & D, vsque ad 360. rur-
sus in B, pro horis Italicis, siue ab Occasu, & pro horis à Meridie; & Me-
dia nocte; & pro Antiquis, seu Planetarijs. Ordo autem numerorum *in-
terior* gradus eosdem 360. numerabit, exordiendo quidem ex B; at è con-
uerso, nimirum versus D, per A, & C, itidem in B; pro horis Babylo-
nis, siue ab Ortū.

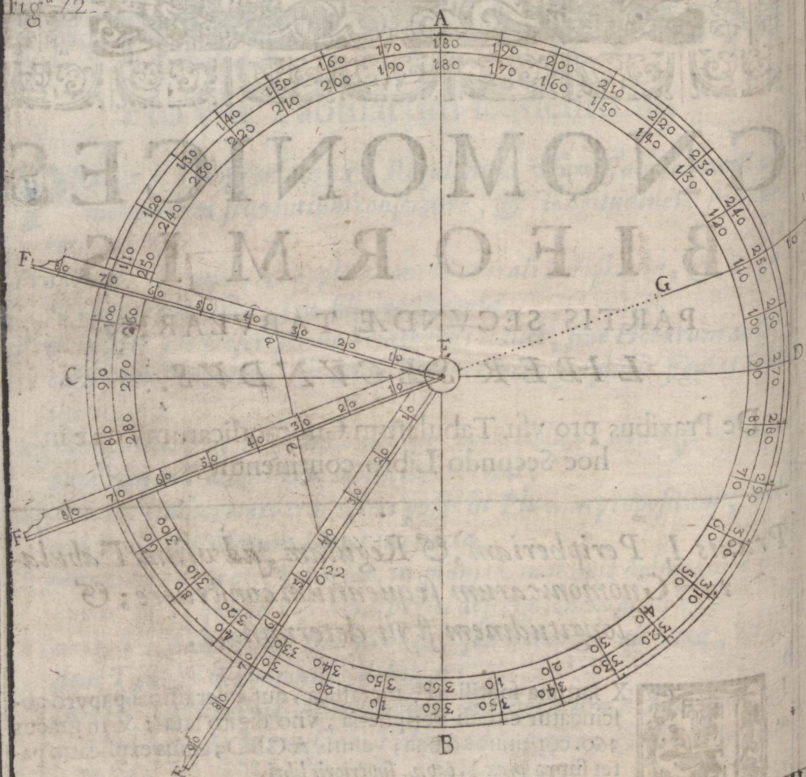
A

Dein-

2

Gnom. Bifor. Part. II. Lib. II. Prax. I.

3 Deinde Regula, EF, in partes quocumque 90. vel 100. vel plures, aut pauciores diuisa paretur.

Fig^a 72*Nota.*

4 IN Peripheria numerantur Arcus Azimuthales, in gradibus, & minutis. In Regula verò computantur Vmbræ in Partibus, quarum singulæ sexaginta minutis æstimantur. Singulæ verò integrarum partium duodenæ, Gnomonis longitudinem valēt. In Figuris autem omnibus Horologiorum positis in calce Tabularum, Stylus est idem, ac designatus in prima Tabula.

Pra

*Praxis II. De usu, & applicatione Generali Peripheria,
& Regula iam constructa; seu fili loco Regula.*

- ¹ IN superficie Plani, in quo descripturus es Horologium, agantur orthogonaliter, siue in crucem due lineæ cœcæ, veluti, A B, & C D, in *Figura superioris praxis*; ita vt sectionis communis earum punctum, E, cum loco Styli prius designato exactè congruat.
- ² Linea A B, in planis Horizontalibus, & in Verticalibus directis, erit semper linea Meridiana, prius inuenta, per *praxim 1. vel 2. cap. 4. lib. 2. primæ partis*; in declinantibus, linea Verticalis, beneficio perpendiculari designata. C D, verò, in Horizontalibus, erit sectio communis plani, & Verticalis primarij; at in Verticalibus, sectio communis plani, & Horizontis.
- ³ His præmissis, plano ipsi clauulis affigatur Peripheria, ita vt eius Diametri, A B, & C D, cum lineis in crucem ductis; & centrum E, cum loco Styli, E, omninò coincidant; eidemque centro E, figatur Regula, in gradus diuisa; vt *superioris praxis Figura* clarè satis demonstrat.
- ⁴ In planis *Horizontalibus* pars B, Peripheriæ Boream aspiciat; in *Verticalibus* autem *Australibus*, eadem pars B, terram versus perpendiculariter cadat; In *Aquilonaribus*, è conuerso, pars B, sursum; A, deorsum collocetur.
- ⁵ Cum autem, præsertim Rure, contingere possit, vt Regula tantæ longitudinis, quanta necesse foret, affabrè elaborata difficilè reperiatur; aut eam secum ferre sit Horographo res incommoda; eo casu, in præcrassa papyro describatur Styli longitudo, diuisa in partes duodecim, quarum singula intelligantur esse minutorum sexaginta. In E, loco Regulæ infixio clauulo appendatur filum; & paretur circinus. Tum super gradum Peripheriæ, quem Tabula Gnomonica postulat, filum extendatur, & in ipso, à centro E, Vmbrarum partes, & minutiae, circino sumptæ ex Styli diuisi longitudine (pluries etiam, si opus sit) repetita, numerentur. In numerationis enim termino, erit Vmbræ punctum quæsitum, & inuentum non secus, ac per Regulam; veluti in sequente praxi.

Praxis III. De Descriptione Sciatherici Italici, siue Horarum ab Occasu, per Tabulas; & Monitum de Chalcographicis figuris Sciathericorum.

- ¹ PRIMUM obseruetur quale sit Planum, in quo Sciathericum delineandum est; num scilicet Horizontale sit, aut Verticale. Quod si Verticale existat, rursus videndum est, an sit Horizonti rectum, & Meridiano directum; an verò inclinatum, aut declinans. Si directum fuerit, adhuc expendendum est, num Australe, an Boreale sit. Sin autem declinans fuerit,

eius declinatio à Meridie, vel à Borea prius determinanda est; & an sit ad Ortum, vel ad Occasum; idque vel *Organicè* (per praxim 8. cap. 2. *Episag. 2. lib. 1. primæ partis*), vel *Geometricè*, per caput 11. lib. 2. eiusdem partis.

2 Posita, ac determinata Plani qualitate, accipiat Tabula Gnomonica, dato Plano conueniens; nimirum *Prima*, si Planum Horizontale fuerit; *Secunda* verò, si Verticale rectum, & directum; aut quævis alia, si declinans fuerit, iuxta declinationis denominationem, à Meridie scilicet, vel à Borea, & ad Ortum, vel ad Occasum. Vbi *notandum est*, Tabulas Gnomonicas singulas Verticales esse duplices, hoc est, duplici Sciatherico deferuire; quorum vnum est *Australe*, & alterum *Boreale*. *Australe* delineatur per numeros laterales in Tabulis singulis, in prima columna, à sinistris Horographi positos, cui proinde titulus est, *H. Merid.* idest *horæ Meridionales*. *Boreale* verò Sciathericum describendum est per numeros ultimæ columnæ Tabulæ Gnomonicæ, quæ est à dextris Horographi; cui titulus est, *H. Aquil.* idest *horæ Aquilonares*. Vnde etiam Diagrammata Chalcographica pro horis Italicis, ad cuiuslibet Tabulæ calcem, singula duplex Sciathericum huiusmodi expriment; *Meridionale* scilicet infra lineam Horizontalem HO, & *Aquilonare*, siue *Boreale* supra; quod etiam indicat inscriptio.

3 His optimè expensis, Sciathericum Horizontale delineabis, vt iacet. *Verticale* autem, licet vnum, vel alterum tantum cupias, hoc est, *Meridionale*, aut *Boreale*; puncta omnia nihilominus in Plano pro descriptione singulorum horarum imprimenda sunt. Sic

4 Ex Tabula (applicata iam Plano Peripheria, & Regula, vt in *superiori praxi*) pro horis singulis, singulisque cuiuslibet horæ punctis, acceptus Arcus (per notabile num. 4. *praxis 1. huius libri*) numeretur in Peripheria; & numerationis termino admoveatur Regula secundum latus in gradus diuisum; in quo, manente immoto, numeretur Umbra eidem Arcui respondens, & in fine numerationis imprimatur punctum; Quod fiet pro singulis Arcubus, & Umbris cuiuslibet horæ; & per terna, vel bina quæque puncta, ducta recta, erit linea horæ quæsitæ.

5 *Exemplum*. Quarantur tria puncta horæ 22. Italicæ in plano Horizontali, sub Altitudine Poli grad. 45. m. 0.

Ex Tabula prima, quæ habetur infra pro Horizontali, inuenio binas columnas sub titulo Cancræ, quæ sunt secunda, & tertia; & è Regione horæ 22. accipio Arcum grad. 104. m. 24. illum numero in Peripheria; & in fine numerationis sisto Regulam, secundum latus in gradus diuisum; deinde sic immoto latere, in ipso enumero partes, & minuta Umbra, quæ eidem Arcui in directum respondent, nempe P. 34. m. 22. Ac in termino numerationis imprimo punctum, a, in *Figura primæ praxis*. Idem facio pro eiusdem horæ 22. imprimendo punctum, e, Equatoris, & punctum, o, Capricorni, per quæ tria puncta, ducta recta a e o, est linea horæ 22. quæsitæ. Et sic procedo in reliquis singulis horarum lineis, donec tota completa est horarum descriptio.

6 Si ergo Horologium (quod bene notandum) fuerit Horizontale, lineæ horarum, quæ omnia tria puncta habent, ducendæ erunt omnes integræ apparen-

tes,

tes, vtrinque in extrema puncta terminata; quæ verò duo tantum puncta habent, duci debent à puncto stylo proximiori, per punctum Æquatoris quousque libuerit, idest ad arbitriam longitudinem, quoad aliud extremum, dummodo planum descriptioni Horologij paratum non excedant. Quod si planum fuerit Verticale, *præcauendum est*, ne lineæ horariæ ducantur apparentes, nisi infra lineam Horizontalem, cœcam, CD; in *Figura prima praxis huius libri*.

7 Tum demum refixis Peripheria, & Regula, figatur Stylus semper in proprio loco, E (cuiuscumque generis sit Horarium) perfectæ Orthogonaliter cum plano; ita, vt partes duodecim ex illis, in quas diuisa est Regula, è plano exactè promineat. Vel, vbicumque styli pes locatus fuerit, vel in plano, vel extra; & cuiuscumque figuræ, iuxta ea, quæ diximus in *superiori parte lib. 2. cap. 1.* Apex tamen illius, videlicet horarum index, locum, in aere teneat eundem, ac si plano Orthogonalis figeretur.

8 *Quæres 1. Quid agendum sit, quando alicuius horæ Italica non nisi unicum punctum in Tabulis Gnomonicis reperitur.*

Respondeo, in tali casu assumendum esse in auxilium punctum Æquatoris horæ datæ oppositæ; cuiusmodi sunt hora 11. & 23. hora 10. & 22. hora 9. & 21. Videantur ea, quæ diximus in *superiori parte lib. 2. cap. 6. prax. 5. num. 3. 4. 5. & 6. & cap. 13. prax. 2. num. 6.* Præterea infra *praxis 6. huius libri*, quæ huic etiam difficultati opem aptissimam feret.

Exemplum. Sit ducenda linea horæ decimæ Italicæ in *Figura prima praxis huius libri*, in plano Horizontali. Hæc hora in Tabula prima habet tantum punctum Tropici Cancræ, in prædicta Figura, signatum, G. Posita itaque Regula lignea super punctum, G, & punctum, E, horæ 22. in Æquatore, ducam lineam horariam, G, 10. quæsitam. Et sic in cœteris similibus.

9 *Quæres 2. Quomodo Sciathericum transferri possit in planum propositum, si illud prius delineatum fuerit in charta.*

Respondeo, id nos facillimo negotio assecuturos, si folium papyraceum, in quo Sciathericum delineatum fuerit in plano dato clauulis, aut glutine firmetur, & linearum horariorum, capita ita acu, vel subula forentur, vt in plano punctorum notæ remaneant impressæ; nam si intra binam singula extrema puncta lineæ ducantur, erit descriptum Horologium optatum in plano.

Quæ.

¹⁰ *Quæres 3. Quanam lineæ, præter horarias, in planis Conotomis delineanda sint apparentes; quæue post Sciatherici descriptionem abolenda.*

Respondeo, præter horarias, alias duas depingendas esse, scilicet, lineam *Æquinoctialem*, & lineam *Meridianam*, & si placeat, lineas etiam curvas parallelorum Solis; veluti in Sciatherico, quod habetur infra in calce primæ Tabulæ, & supra in prima parte lib. 2. cap. 6. prax. 5.

¹¹ Linea *Æquinoctialis* ducetur per propria puncta, saltem per duo ab invicem remotiora, sicut infra in Sciathericis Tabularum.

¹² Linea *Meridiana* in Horizontalibus, & in Verticalibus planis ad Meridianum rectis, semper cum linea, E B (in *Figura primæ praxis huius libri*) coincidit; atqui in planis declinantibus, semper ducenda est perpendicularis lineæ Horizontali, C D, siue, H O, in Sciathericis Tabularum sequentium, per communem sectionem lineæ *Æquinoctialis*, & horæ decimæ octavæ.

Praxis IV. Sciatherica Babylonica, seu horarum ab Ortū, ex ijsdem Tabulis Gnomonicis describere.

¹ **E**adem Tabula Gnomonica pro horis *Italicis*, siue ab Occasu supputata, *Babylonicis*, siue ab Ortū delineandis æque deseruit, si Peripheria plano affixa, ut in secunda praxi huius libri, in descriptione horarum, ordo numerorum interior adhibeatur, ut in num. 2. praxis 1. huius libri; & horæ singulæ notentur numeris horarum, quæ sunt in prima columna Tabulæ à dextris aspicientis, hoc est numeris, quibus simul cum numero horæ ab Occasu efficiatur 24. *Exempli gratia*, hora vigesima tertia ab Occasu, erit hora prima ab Ortū; & vigesima secunda ab Occasu, fiet secunda ab Ortū, &c.

² Præterea idem Horologium Italicum, siue ab Occasu, *Horizontale*, & *Verticale directum* (quod etiam supra parte 1. lib. 2. cap. 6. prax. 5. num. 7. admonuimus) si describatur in folio papyraceo, capitibus linearum Acutransfixis, & lineis horarijs ductis in opposita folij superficie, *Babylonicum* fiet Horarium, siue ab Ortū; dummodo mutantur numeri, ut supra.

³ Notandum est tamen, pro declinantibus, Horologium *Babylonicum*, quod fit per Tabulam Gnomonicam *Italicam*, retinere quidem denominationem termini, à Quo, declinationis, hoc est, à Meridie, vel à Boreâ; at oppositam sortiri denominationem termini, ad Quem, scilicet Ortus, vel Occasus, servata nihilominus declinationis quantitate. Quare si cupias, *exempli gratia*, Sciathericum horarum ab Ortū pro pariete declinante à Meridie ad Occasum grad. 50. describendum erit per Tabulam Gnomonicam Sciatherici *Italicam* pro declinante itidem à Meridie grad. 50. sed ad Ortum, non

ad Oc-

ad Occasum; quandocumque delineatum fuerit; siue per interfectionem folij; siue per interiorum ordinem numerorum Peripheria.

Praxis V. Sciatherica Astronomica, siue horarum à Meridie, & à Media nocte per easdem Tabulas depingere; & de eorum Tropici, & alijs parallelis.

Huius rei gratia in singulis Tabulis, in inferiori laterculo, positus est numerus partium, & minorum Vmbrae Altitudinis Poli; cuius proinde titulus est, *Distantia*, siue *Altitudo Poli*.

² Descripta igitur Meridiana, iacens, in *Horizontalibus*, & perpendicularis in *Verticalibus* quibuscumque, semper autem (ex num. 12. prax. 3. huius libri) per sectionem communem horæ 18. & Æquinoctialis; ea occultè producatur sursum, scilicet supra lineam Verticalem in *Horizontalibus*, aut *Horizontali* in *Verticalibus*. Tum ad ipsam occultam admouetur latus Regulæ in gradus diuisum (centro, E, fixo manente in loco Styli;) & ubi terminus partium, & minorum Altitudinis prædictæ in eodem latere numerate, tangit occultam, imprimatur punctum: nam illud erit centrum Horologij, à quo rectæ ductæ per singulas sectiones Æquatoris, horarum integralium ab Occasu, erunt lineæ Horologij Astronomici, seu à Meridie, & à Media nocte, ex quibus Meridiana semper est linea horæ duodecimæ. Videatur *pars prima cap. 6. prax. 3.*

³ Tropici, & reliqui paralleli in Astronomicis, iidem sunt atque in horis Italicis. Quare si curvæ ipsorum lineæ ducantur, eadem opera, horas utraque terminabunt.

Praxis VI. Quid agendum sit, quando pro descriptione horarum Astronomicarum, seu à Meridie, & à Media nocte, vel ob loci angustias, vel quia nimis remotum sit, centrum horarum ipsarum haberi non potest; & quando horæ Italicæ unicum tantum punctum habent.

HAc de re Methodos aliquas dedimus in prima parte, præsertim libro secundo, capite sexto, praxi 3. num. 15. & capite 13. praxi 2. num. 6. cuius in primo fundamento hic generalem trademus Methodum, pulcherrimam, breuissimam, & facillimam supplendi Arcus Horizontales, quibus Tabulæ, Methodo Paduana supputatæ, apud omnes deficiunt; cum tamen in aliquibus horis omnino necessarij sint; omnibus autem commodissimi.

Arcus Horizontales, & Verticales pro Horis Italicis,

Horæ	24	23	22	21	20	19
Horæ	24	1	2	3	4	5

G. Polar. Horizon.	G. Polar. Vertical.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.
30	60	0. 0	3. 46	7. 38	11. 42	16. 6	20. 59
31	59	0. 0	3. 53	7. 52	12. 3	16. 34	21. 34
32	58	0. 0	3. 59	8. 5	12. 23	17. 1	22. 8
33	57	0. 0	4. 6	8. 19	12. 43	17. 27	22. 41
34	56	0. 0	4. 17	8. 31	13. 2	17. 54	23. 13
35	55	0. 0	4. 19	8. 44	13. 22	18. 19	23. 45
36	54	0. 0	4. 25	8. 57	13. 41	18. 45	24. 16
37	53	0. 0	4. 32	9. 10	14. 0	19. 10	24. 47
38	52	0. 0	4. 38	9. 22	14. 18	19. 34	25. 17
39	51	0. 0	4. 44	9. 34	14. 37	19. 58	25. 46
40	50	0. 0	4. 50	9. 46	14. 55	20. 22	26. 15
41	49	0. 0	4. 56	9. 58	15. 12	20. 45	26. 43
42	48	0. 0	5. 2	10. 10	15. 30	21. 7	27. 10
43	47	0. 0	5. 8	10. 21	15. 46	21. 30	27. 37
44	46	0. 0	5. 14	10. 33	16. 3	21. 51	28. 9
45	45	0. 0	5. 19	10. 44	16. 19	22. 12	28. 29
46	44	0. 0	5. 25	10. 55	16. 36	22. 33	28. 54
47	43	0. 0	5. 30	11. 5	16. 51	22. 53	29. 18
48	42	0. 0	5. 35	11. 16	17. 7	23. 13	29. 41
49	41	0. 0	5. 40	11. 26	17. 22	23. 33	30. 4
50	40	0. 0	5. 46	11. 36	17. 36	23. 51	30. 25
51	39	0. 0	5. 51	11. 46	17. 51	24. 10	30. 48
52	38	0. 0	5. 55	11. 55	18. 5	24. 28	31. 10
53	37	0. 0	6. 0	12. 5	18. 18	24. 45	31. 30
54	36	0. 0	6. 5	12. 14	18. 32	25. 2	31. 50
55	35	0. 0	6. 9	12. 23	18. 45	25. 19	32. 9
56	34	0. 0	6. 14	12. 31	18. 55	25. 25	32. 28
57	33	0. 0	6. 18	12. 40	19. 9	25. 50	32. 46
58	32	0. 0	6. 22	12. 48	19. 21	26. 5	33. 3
59	31	0. 0	6. 26	12. 56	19. 36	26. 20	33. 20
60	30	0. 0	6. 30	13. 4	19. 34	26. 34	33. 36

Altitudes Polorum pro Arcubus Horizontalibus.

Horæ	12	11	10	9	8	7
Astron.	12	11	10	9	8	7

Lib. II. Prax. VI.

9

Babylonis, & Astronomicis, ad plures Altitud. Poli.

	18	17	16	15	14	13	12	Italicæ
	6	7	8	9	10	11	12	Babyl.
Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	
19	26. 34	33. 5	40. 54	50. 22	61. 49	75. 15	90. 0	
5	27. 15	33. 52	41. 44	51. 12	62. 31	75. 40	90. 0	
Grad. M.	27. 55	34. 38	42. 33	51. 59	63. 11	76. 9	90. 0	
20. 59	28. 34	35. 32	43. 40	52. 45	63. 48	76. 25	90. 0	
21. 34	29. 13	36. 5	44. 5	53. 28	64. 24	76. 45	90. 0	
22. 8	29. 50	36. 47	44. 49	54. 10	64. 58	77. 4	90. 0	
22. 41	30. 25	37. 27	45. 31	54. 50	65. 30	77. 23	90. 0	
23. 13	31. 2	38. 6	46. 11	55. 28	66. 0	77. 40	90. 0	
23. 45	31. 37	38. 45	46. 50	56. 4	66. 29	77. 56	90. 0	
24. 16	32. 11	39. 21	47. 28	56. 39	66. 56	78. 11	90. 0	
24. 47	32. 44	39. 57	48. 4	57. 12	67. 22	78. 26	90. 0	
25. 17	33. 16	40. 32	48. 39	57. 44	67. 47	78. 39	90. 0	
25. 46	33. 47	41. 5	49. 13	58. 14	68. 11	78. 52	90. 0	
26. 15	34. 18	41. 38	49. 45	58. 44	68. 33	79. 4	90. 0	
26. 43	34. 47	42. 9	50. 16	59. 12	68. 54	79. 10	90. 0	
27. 10	35. 16	42. 40	50. 46	59. 38	69. 15	79. 28	90. 0	
27. 37	35. 44	43. 9	51. 15	60. 4	69. 34	79. 38	90. 0	
28. 9	36. 11	43. 37	51. 43	60. 28	69. 53	79. 48	90. 0	
28. 29	36. 37	44. 5	52. 9	60. 52	70. 10	79. 57	90. 0	
28. 54	37. 3	44. 32	52. 35	61. 14	70. 27	80. 6	90. 0	
29. 18	37. 27	44. 57	53. 0	61. 36	70. 43	80. 15	90. 0	
29. 41	37. 51	45. 22	53. 23	61. 57	70. 59	80. 23	90. 0	
30. 4	38. 14	45. 46	53. 46	62. 16	71. 13	80. 31	90. 0	
30. 25	38. 37	46. 9	54. 8	62. 35	71. 27	80. 38	90. 0	
30. 48	38. 58	46. 31	54. 29	62. 53	71. 41	80. 45	90. 0	
31. 10	39. 9	46. 52	54. 49	63. 11	71. 53	80. 52	90. 0	
31. 30	39. 40	47. 13	55. 9	63. 27	72. 5	80. 59	90. 0	
31. 50	39. 59	47. 33	55. 27	63. 43	72. 17	81. 5	90. 0	
32. 9	40. 18	47. 52	55. 45	63. 58	72. 28	81. 11	90. 0	
32. 28	40. 36	48. 10	56. 2	64. 13	72. 38	81. 16	90. 0	
32. 46	40. 54	48. 28	56. 19	64. 26	72. 48	81. 21	90. 0	
33. 3								
33. 20								
33. 36								
1 2 $\frac{1}{2}$	3 1	3 $\frac{1}{2}$ 1	4 1	4 $\frac{1}{2}$ 1	5 1	5 $\frac{1}{2}$ 1	6 1	Astro-
1 9 $\frac{1}{2}$	9 1	8 $\frac{1}{2}$ 1	8 1	7 $\frac{1}{2}$ 1	7 1	6 $\frac{1}{2}$ 1	6 1	Inomica

B

Pri-

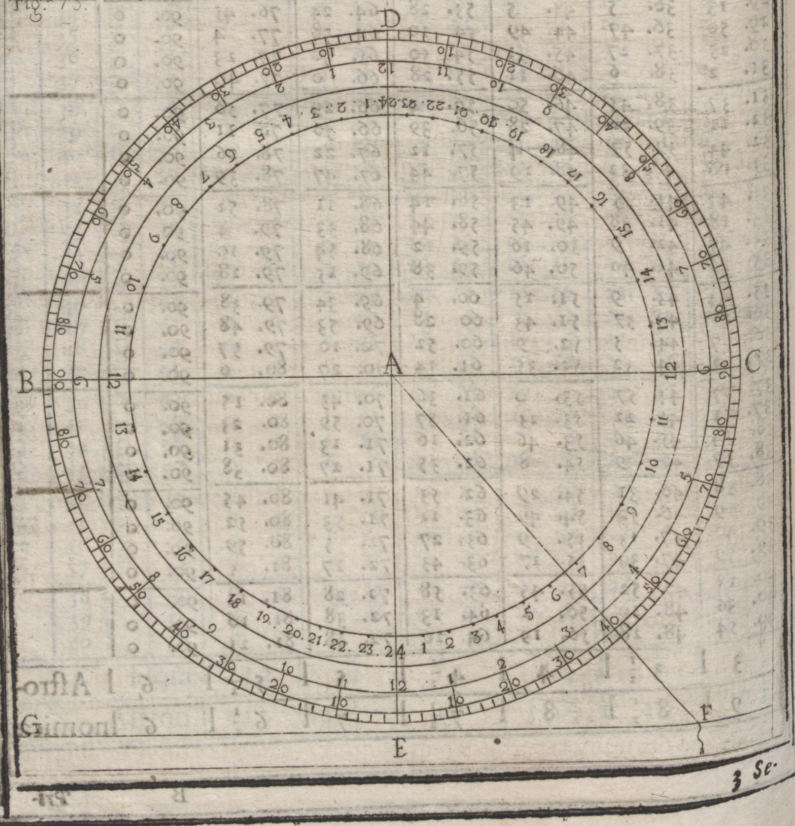
2. Primum itaque (per num. 13. prax. 3. c. 6. prime partis) ad altitudinem Poli Regionis, sub qua cōcinnata sunt Tabule Gnomonica, supputentur Arcus Horizontales; (idest Arcus Horizontis, inter Verticalem primarium, & singulos circulos horarios intercepti) pro singulis dimidiis horis Astronomicis.

Exemplum. Quaratur ad Altitudinem Poli grad. 45. Arcus Horizontalis horæ semissis ante, vel post Meridiem, erit.

Analogismus. Vt Radius 100000. Ad Altitudinis Poli grad. 45. Sinum 70711. Ita distantia à Meridiano cuiuslibet horæ semissis, in Equatore grad. 7. m. 30. Tangens 13165. Ad 9309. Tangentem grad. 5. m. 19. Arcus Horizontalis horæ dimidiæ ante, vel post Meridiem. Singulis enim semissibus horarum pro distantia à Meridiano tribuendi sunt gradus 7. m. 30. Vt distantia

Exempli gratia, horæ tertiæ, & dimidiæ, sit grad. 52. m. 30.

Fig. 75.



3. *Secundò*, Inuenti Arcus disponantur ex ordine, adiectis horis *Astronomicis*, *Italicis*, & *Babylonicis*, velut in superiori Tabula Arcuum Horizontalium, ad plures Altitudines Poli supputata.

4. *Tertiò*, in subtiliori lamina metallica, aut in præcrassa papyro describatur Peripheria, A B C D E, cuiuscumque amplitudinis; minoris tamen, quam Peripheriæ, quæ pro descriptione horarum assumitur. Illius Quadrantes singuli diuidantur in gradus 90. capta numeratione ex D, & E, versus B, & C. Tùm Arcus Horizontales iam Inuenti in ea distribuuntur, & in intimo Peripheriæ circulo notentur punctis, quibus horæ, tùm *Italica*, siue ab Occasu, tùm *Astronomica*, siue à Meridie, & Media nocte, eadem subijciuntur serie, qua in apposita Graphide Peripheriæ apparet; fluatque ex centro A, filum, A F; erit instrumentum Arcuum Horizontalium, pro horis *Astronomicis*, *Italicis*, & *Babylonicis* pulcherrimè paratum; cuius talis erit vsus.

5. In *Sciathericis Horizontalibus* producatür linea Meridiana, E B, (in *Figura primæ praxis huius libri*) supra lineam Verticalem, C D; vel (in *presenti Figura*) B C, ex E, in A, ad longitudinem arbitrariam Styli, E A. Deinde centrum A, Peripheriæ clauulo firmetur in plano, ita, vt cum Apice Styli, A, exactè congruat; & Semidiameter, D E, omninò cum plani Meridiana coincidat. Tùm supra singula puncta interioris circuli contendantur filum, A F, vt secet Verticalem, G F, veluti in F; & singulæ sectiones puncto notentur: erunt hæc puncta Horographis auxilio, in horis describendis, dato quouis alio puncto cuiusvis paralleli, aut *Æquatoris*; etiam absque centro Horologi.

Quoniam autem hæc Peripheria ita diuisa, & quoad horas numerata, maximè *Verticalibus* deseruit; Notandum est, pro descriptione Horizontalium, horas *Italicas*, quæ continentur in Quadrante, B E, commutandas esse in earum complementa vsque ad triginta sex. *Exempli gratia*, hora 12. in 24. hora 13. in 23. 14. in 22. &c. *Babylonica* autem, scilicet, horæ Quadrantis, E C, conuertendæ sunt in earum complementa ad num. 12. hoc est, prima in vndecimam; secunda in decimam, &c. sic & *Astronomica*, posita in tertio spatio Peripheriæ.

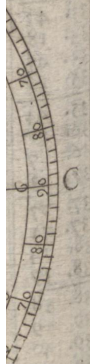
6. Pro *Verticalibus directis*, eodem modo, collocata Arcuum Horizontalium Peripheria; & filo, A F, per singula puncta circuli interioris extento, sectiones, quæ proinde contingent in linea Horizontali, eadem notabunt horas, quæ in ipsis spatijs Peripheriæ.

7. In *Verticalibus denique Declinantibus*, producta itidem Verticali, quæ per Stylum transit, supra Horizontalem, G F, ad longitudinem Styli, E A, clauulus fixus in centro, A, Peripheriæ, eandem firmabit, in A, vertice Styli; sed volubilem, vt hinc, inde in gyrum acta, eius Semidiameter, A E, cum linea, A E, producta in plano Conotomo angulum plani declinationis concludat; & quidem à dextris Horographi, si planum declinat ad Ortum; veluti Angulus, E A F; a sinistris verò, si in Occasum vergit. Nam eo situ immota permanente, filum A F, extantum super singula pun-

cta

Poli Re-
cus Ho-
& singu-
omicis.
zontalis

70711.
grad. 7.
Horizon-
libus Ho-
distantia



3 Se.

Ita interioris circuli, Arcus Horizontales respondentes horis eisdem, quæ in Peripheria describuntur, in linea, GF, Horizontali distinguet. Verum hæc pro vulgaribus.

8 Cæteroqui expertus Horographus (ex num. 13. praxi 5. cap. 11. lib. 2. primæ partis) hæc omnia perficiet, vel simplici Quadrante; vel Regula ipsa, EF, (Figura primæ praxis huius libri) Arcubus Horizontalibus (per num. 15. prax. 5. modocitata) conuersis in Umbras; ad proportionem Styli in 12. partes æquales diuisi, (per praxim 9. cap. 1. superioris libri) redactas. Verum de ijs hæc tenus.

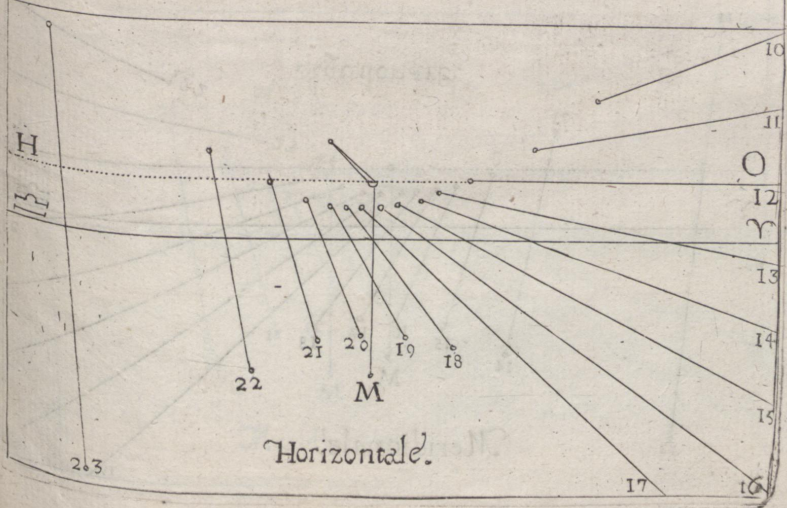
Sequuntur iam Tabula Gnomonica.

I. N. SS. T. D. Q. V.



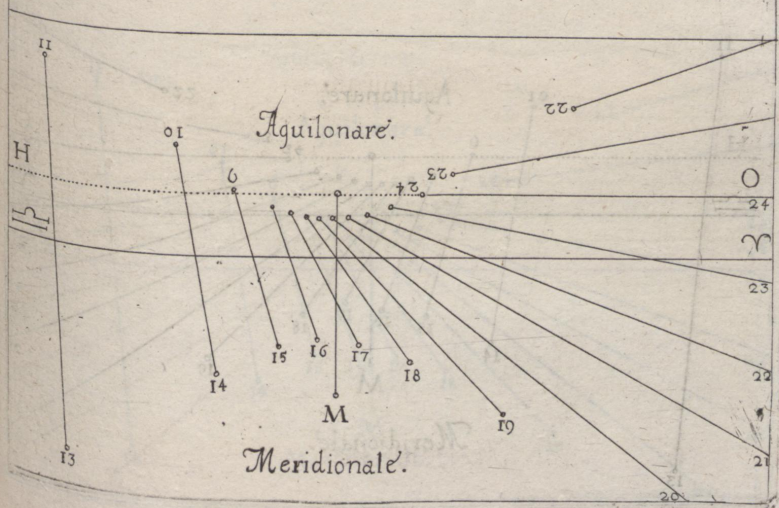
T A-

Tab. Horologij Horizontalis more Italico et Babil. Ali. Pol. 45.													
H Italica	Tropic. Cancr.				Equinoctialis.				Tropic. Capricor.				H Babil.
	Arcus.		Umbr.		Arcus.		Umbr.		Arcus.		Umbr.		
	G	M	P	M	G	M	P	M	G	M	P	M	
9.	240.	13	175.	17									15.
10.	250.	10	49.	47									14.
11.	259.	54	27.	14									13.
12.	270.	0	17.	34	270.	0	Infinita					Dist: Pol.	12.
13.	281.	31	12.	3	280.	44	64.	26				P. M.	11.
												12.	0
14.	296.	14	8.	26	292.	12	31.	45					10.
15.	317.	34	6.	0	305.	16	20.	47					9.
16.	349.	30	4.	48	320.	46	15.	29	310.	28	144.	26	8.
17.	25.	46	5.	9	339.	15	12.	50	322.	14	56.	8	7.
18.	52.	50	6.	56	360.	0	12.	0	335.	17	37.	52	6.
19.	70.	45	9.	51	20.	45	12.	50	349.	26	31.	37	5
20.	83.	47	14.	9	39.	14	15.	29	4.	10	30.	30	4
21.	94.	31	21.	2	54.	44	20.	47	18.	40	34.	18	3
22.	104.	20	34.	20	67.	48	31.	45	32.	14	45.	38	2
23.	114.	7	73.	41	79.	16	64.	26	44.	33	83.	58	1

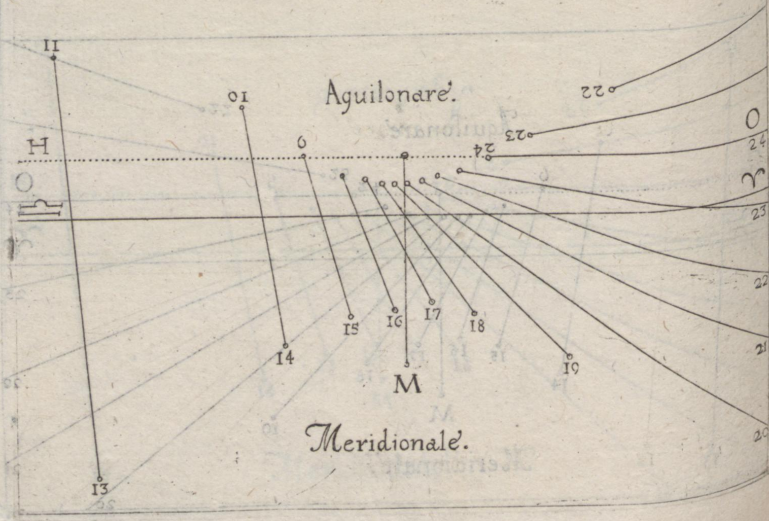


45.	H. Aquil.
cri	
bra.	
M	
58	11
38	10
18	9
39	8
37	7
52	6
8	5
26	4
3	3
2	2
1	1
Pol.	
M	
O	
24	
25	
22	
21	

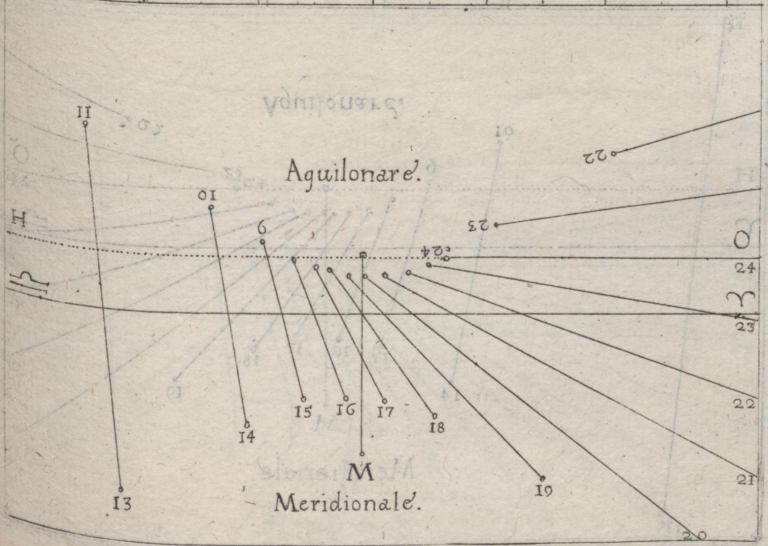
Declinat. ad Ort: Grad: 1 Lat: 45.											
Tropie Capric.				Aguinoccialis				Tropie Cancr.			
Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.	
G.	MP	G.	MP	G.	MP	G.	MP	G.	MP	G.	MP
27	240	14	225	15							
26	250	15	53	46							
25	250	57	28	34							
24	270	0	18	16							
23	281	43	12	28	280	42	71	12			
22	295	35	8	42	292	5	33	24			
21	316	6	6	10	304	57	21	28			
20	349	57	4	50	320	11	15	50	310	26	172
19	23	36	5	4	338	23	13	15	0	322	5
18	51	46	6	44	359	0	12	0	335	1	38
17	70	11	9	32	19	52	12	42	349	6	31
16	83	36	13	42	38	37	15	10	3	48	30
15	94	38	20	16	54	23	20	8	18	20	33
14	104	25	32	33	67	39	30	16	31	0	44
13	114	10	66	55	79	14	58	49	44	26	77
12	124	20	825	13	90	0	687	34	55	40	842



Declinat: ad Occas: Gr: 1. Lat: 45.									
Tropie. Capric.			Aguinoctialis			Tropie. Cancr.			H. Aquil.
Arcus.	Vmbra		Arcus.	Vmbra		Arcus.	Vmbra		
G.	MP.	M.	G.	MP.	M.	G.	MP.	M.	
13.114	481	56	79	1871	12	44	3892	0	11
14.104	1836	18	67	5533	24	32	2047	29	10
15.94	2621	54	55	327	28	19	034	54	9
16.83	5214	39	39	4915	50	4	3330	45	8
17.71	510	10	21	3713	0	349	4931	20	7
18.53	527	9	1	012	0	335	3437	0	6
19.27	155	16	340	812	0	42322	2453	28	5
20.351	594	48	321	2315	10	310	32124	38	4
21.319	25	51	305	3720	0	8			3
22.296	528	11	292	2130	16				2
23.281	4111	43	280	4658	49				1
24.270	016	56	270	00687	34				24
25.259	5026	10							23
26.250	346	31							22
27.240	10143	25							21
									Alt: Pol: 12
									P: M: 0



Tab. v.		Declinat. ad Orr. Gr. 2. Lat. 45												
H. M. d.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. M. d.				
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.					
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.					
27	240		314		49								21	
26	250	19	58		12								22	
25	259	57	30		0								23	
24	270	0	18		59								24	
23	281	12	12		55	280	40	79	30				1	
22	295	2	9		1	291	56	35	9				2	
21	344	45	6		23	304	38	22	14				3	
20	344	39	4		54	319	36	16	14	310	22	213	32	4
19	21	22	4		57	337	32	13	10	321	55	62	43	5
18	50	36	6		30	358	0	12	1	334	43	39	57	6
17	69	53	9		12	18	57	12	32	348	42	32	16	7
16	83	32	13		12	37	59	14	49	3	22	30	26	8
15	94	39	19		26	54	2	19	29	17	59	33	9	9
14	104	32	30		56	67	30	28	53	31	36	42	30	10
13	114	21	61		16	79	11	54	3	44	20	71	27	11
12	124	21	412		29	90	0	343	44	55	39	416	38	12

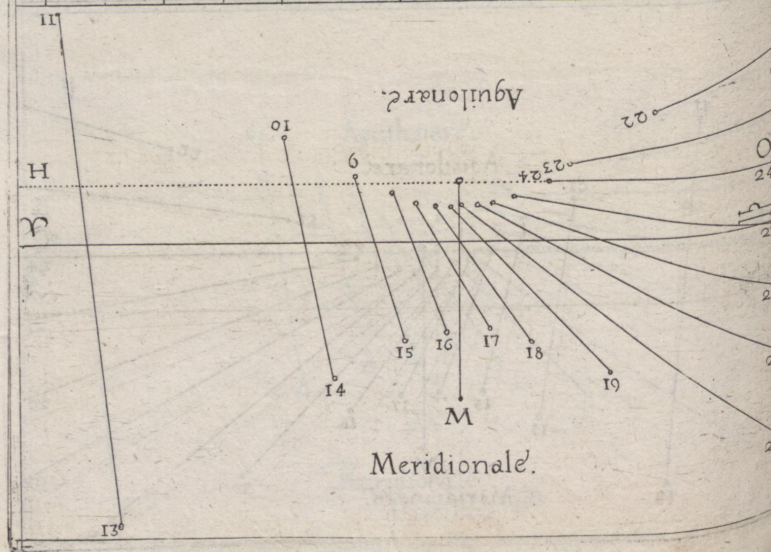


Tab. 6

Declinat. ad Occas. Gr. 2. Lat. 45.

H. Merid.	Tropie. Capri.				Aguinoctialis.				Tropie. Cancr.				H. Aquil.						
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.								
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.										
13.	114	.	1	92	.	11	79	.	20	79	.	20	44	.	44	101	.	54	11
14.	104	.	12	38	.	20	68	.	4	35	.	9	32	.	40	49	.	25	10
15.	94	.	28	22	.	51	55	.	22	22	.	14	19	.	19	38	.	35	9
16.	83	.	54	15	.	12	40	.	24	16	.	14	4	.	57	30	.	53	8
17.	71	.	24	10	.	32	22	.	28	13	.	10	350	.	12	31	.	1	7
18.	54	.	46	7	.	24	2	.	0	12	.	1	335	.	53	36	.	4	6
19.	29	.	46	5	.	23	341	.	3	12	.	32	322	.	36	50	.	46	5
20.	354	.	30	4	.	44	322	.	1	14	.	49	310	.	36	109	.	17	4
21.	330	.	11	5	.	40	305	.	58	19	.	29		.			.	3	
22.	297	.	36	7	.	54	292	.	30	28	.	53		.			.	2	
23.	281	.	53	11	.	15	280	.	43	54	.	3		.			.	1	
24.	270	.	0	16	.	20	270	.	0	343	.	44		.			.	24	
25.	259	.	44	24	.	53		.			.			.			.	23	
26.	249	.	59	43	.	28		.			.			.			.	22	
27.	240	.	8	120	.	56		.			.			.			.	1. 21	

Alt. Pol.
P. M.
12.

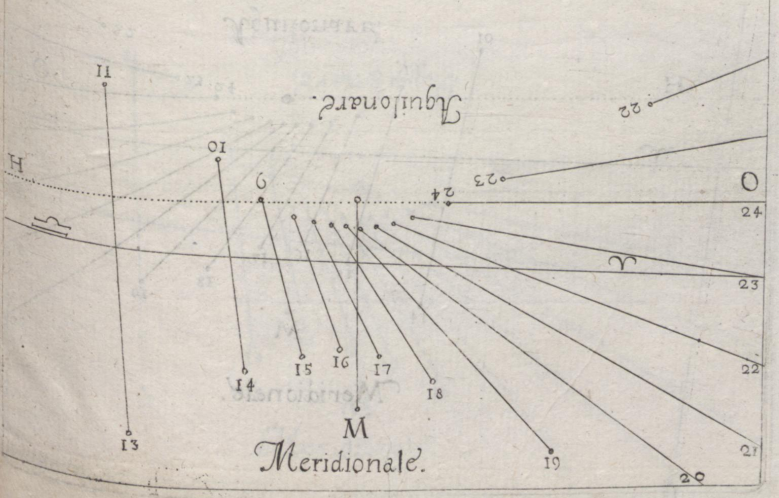


Tab. VII.

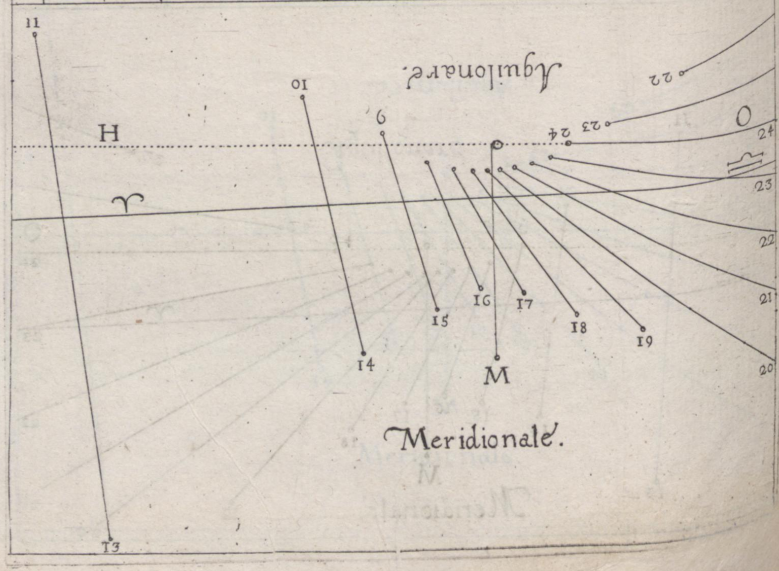
H. Merid.	Ar.	G.
27.	240	
26.	250	
25.	260	
24.	270	
23.	281	
22.	294	
21.	313	
20.	342	
19.	19	
18.	49	
17.	69	
16.	83	
15.	94	
14.	104	
13.	114	
12.	124	

cri.	H. Aguil.
bra.	M.
54	11
25	10
35	9
53	8
1	7
4	6
46	5
17	4
3	3
2	2
1	1
24	24
23	23
22	22
21	21
20	20
19	19
18	18
17	17
16	16
15	15
14	14
13	13
12	12

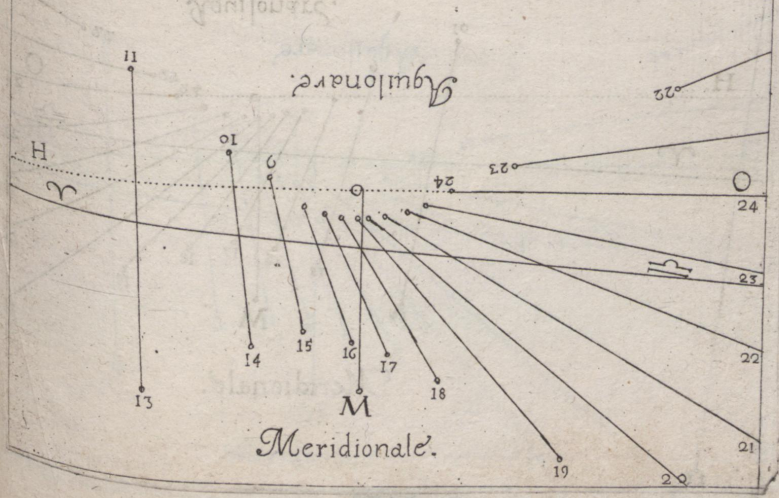
Tab. VII.	Declinat. ad Ort. Grad. 3. Lat 45.													
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Canc.				H. Aguil.	
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	MP	M	G.	MP	M	G.	MP	M	G.	MP	M		
27	240	16	839	38									21	
26	250	22	63	28									22	
25	260	0	31	31									23	
24	270	0	19	41									24	
23	281	1	13	20	280	39	39	44					1	
22	294	32	9	17	291	50	37	47					2	
21	313	37	6	33	303	57	23	0					3	
20	342	33	4	58	319	4	16	36	310	21	304	30	4	
19	19	15	4	53	336	43	13	21	321	47	66	27	5	
18	49	29	6	19	357	2	12	2	334	29	40	58	6	
17	69	29	8	55	18	5	12	2	348	29	32	34	7	
16	83	27	12	48	37	22	14	30	3	1	30	21	8	
15	94	46	18	42	53	40	18	54	17	40	32	37	9	
14	104	40	29	39	67	19	27	40	31	33	41	11	10	
13	114	21	57	13	79	8	50	6	44	13	64	16	11	
12	124	22	322	44	90	0	232	43	55	38	322	14	12	



Declinat. ad Occas. Gr. 3. Lat. 45.												H Aquil.
H Merid.	Tropic. Capric.		Aquinocctialis		Tropic. Canc.							
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.						
	G . M P . M	G . M P . M	G . M P . M	G . M P . M	G . M P . M	G . M P . M						
13	113	56	106	7	79	21	90	37	44	48	114	11
14	104	8	40	51	68	10	37	47	32	50	51	27
15	94	22	23	48	55	3	23	0	19	36	36	25
16	84	6	15	42	40	56	16	36	5	6	31	2
17	71	48	10	52	22	17	13	21	350	33	30	46
18	55	39	7	37	2	58	12	2	336	10	35	18
19	31	31	5	30	341	55	12	24	322	47	48	47
20	356	49	4	43	322	38	14	30	310	40	99	19
21	322	16	5	32	306	20	18	54				4
22	298	14	7	39	292	41	27	40				2
23	282	10	11	55	280	52	50	7				1
24	270	0	15	48	270	0	231	34				24
25	259	35	23	58								23
26	249	54	41	14								22
27	240	5	108	11								21
											Alt. Pol.	
											P. M.	
											12. . 2.	

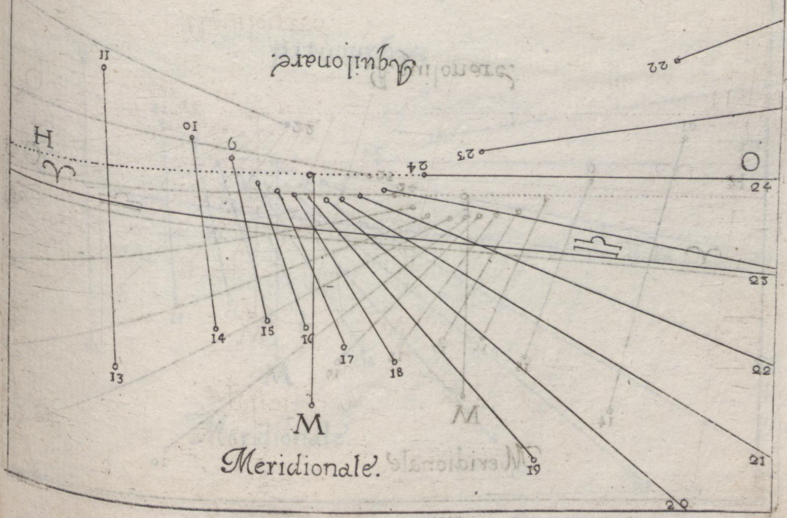


Declinat. ad Ort. Gr. 4. Lat. 45.													
Tropic. Capr.				Aguinoctialis.				Tropic. Cancr.				H.Aquil.	
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
27	240	17	1528	30									21
26	250	26	69	43								22	
25	260	7	33	18								23	
24	270	0	20	31								24	
23	280	55	13	51	280	37	103	27				1	
22	293	58	9	38	291	43	39	17				2	
21	312	17	6	47	304	3	23	52				3	
20	340	3	5	3	318	32	17	2	310	19	404	24	4
19	16	43	4	48	335	54	13	33	321	38	71	4	5
18	48	56		6	356	0	12	4	334	11	42	13	6
17	68	53	8	36	17	8	12	16	347	59	32	58	7
16	83												
15	95	13	12	19	36	41	14	12	2	35	30	17	8
14		9	18	0	53	17	18	19	17	16	32	6	9
13	104	46	28	7	67	10	26	27	31	16	39	42	10
12	114	26	52	24	79	6	46	31	44	6	62	13	11
	124	25	206	8	90	0	171	37	55	36	206	8	12

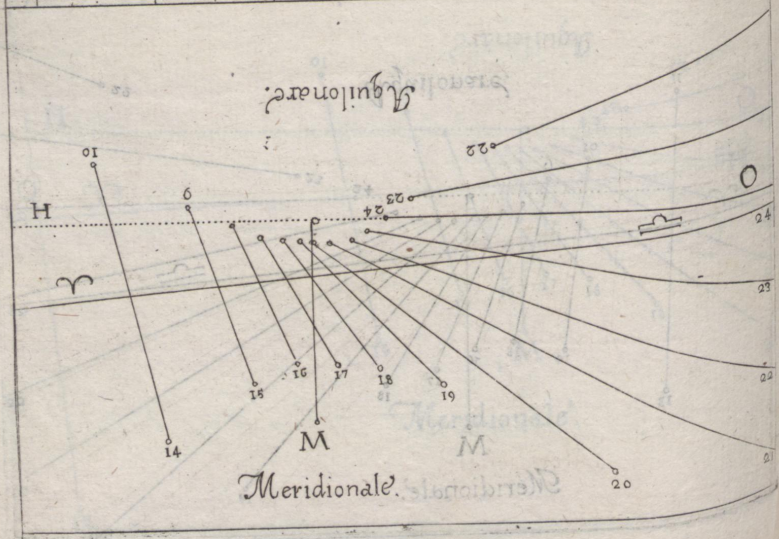


Tab. x.		Declinat. ad Occas. Gr. 4. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Merid.		
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.				
	G.	M P.	M	G.	M	P.	M	G.	M P.	M	G.	M P.			M
13	113	53	119	53	79	23	103	27	44	54	128	57	11		
14	104	4	43	37	68	17	39	17	33	4	53	54	10		
15	94	21	24	55	55	57	23	52	19	57	37	3	9		
16	84	9	16	20	41	28	17	2	5	43	31	12	8		
17	72	7	11	16	24	6	13	33	350	59	30	31	7		
18	56	33	7	53	4	0	12	4	336	30	34	28	6		
19	33	29	5	39	342	52	12	16	323	0	46	27	5		
20	359	35	4	42	323	19	14	12	310	46	87	59	4		
21	324	11	5	22	306	43	18	19					3		
22	399	4	7	22	292	50	26	27					2		
23	282	26	10	31	280	54	46	31					1		
24	270	0	15	11	270	0	171	37					24		
25	259	30	22	51									23		
26	249	47	38	32									22		
27	240	1	92	37									21		
											Alt. Pol.				
											P. M.				
											12	4			

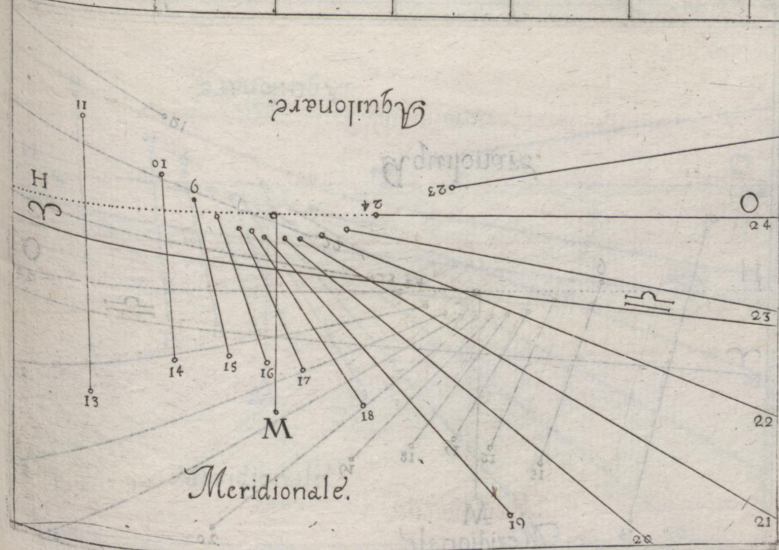
Tab. XI		Declinat. ad Ort. Gr. 5. Lat. 45.												
H. Merid.	Tropie Capric.				Aguinoccialis.				Tropie Canc.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.		
26	250	28	78	8										22
25	260	9	35	14										23
24	270	0	21	24										24
23	280	36	14	19	280	36	122	45						1
22	293	28	9	56	291	37	41	48						2
21	311	8	7	0	303	46	24	47						3
20	337	56	5	9	318	0	17	29	310	19	195	15	4	
19	14	4	4	44	335	3	13	45	321	31	76	15	5	
18	46	48	5	54	354	5	12	5	334	58	43	32	6	
17	68	30	8	18	16	9	12	8	347	37	33	28	7	
16	83	13	11	54	35	58	13	13	2	12	30	12	8	
15	94	20	17	22	52	53	17	45	16	56	31	34	9	
14	104	54	26	54	66	57	25	20	30	60	38	28	10	
13	114	33	49	6	79	2	43	16	43	56	58	39	11	
12	124	27	165	24	90	0	135	48	55	35	164	29	12	



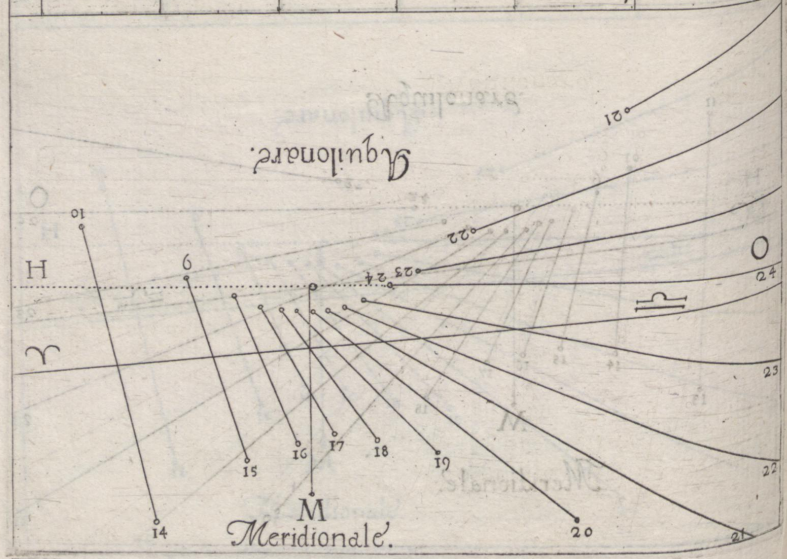
Tabxii.		Declinat. ad Occas. Gr. 5. Lat. 45.												H. Aquil.
H. Merid.	Tropie. Capric.				Æquinoctialis.				Tropie. Canc.					
	Arcus.		Umbra		Arcus.		Umbra		Arcus.		Umbra.			
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.					
13	113	52	147	1	79	24	122	45	44	56	151	55	11	
14	103	56	46	34	68	23	41	48	33	16	56	30	10	
15	94	18	26	6	56	14	24	47	20	13	37	48	9	
16	84	17	16	56	42	0	17	29	6	5	31	22	8	
17	72	30	11	38	24	57	13	45	351	21	30	16	7	
18	57	24	8	7	5	1	12	5	336	50	33	30	6	
19	35	12	5	47	343	51	12	8	323	12	44	34	5	
20	2	6	4	42	324	2	13	53	310	50	81	36	4	
21	326	1	5	13	307	8	17	45	299	42	1650	34	3	
22	299	52	7	8	293	3	25	20					2	
23	282	40	10	9	280	58	43	16					1	
24	270	0	14	36	270	0	235	48					24	
25	259	24	21	58									23	
26	249	42	36	34									22	
27	239	56	83	53									21	
												Alt. Pol.		
												P.	M.	
												12	5	



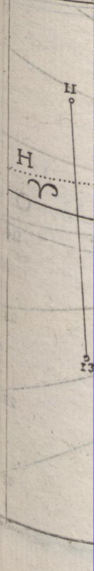
Tab. XIII. Declinar. ad Ort. Grad. 6. Lat. 45.														
H. Merid.	Tropie. Capric.				Aguinoctialis.				Tropie. Canc.				H. Aguil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
26	250	33	86	40										22
25	260	16	37	16										23
24	270	0	22	15										24
23	280	34	14	50	280	35	147	33						1
22	293	2	10	16	291	29	44	22						2
21	310	0	7	11	303	30	25	41						3
20	335	45	5	14	317	30	17	54	310	18	3761	43	4	
19	11	50	4	40	334	28	13	57	321	23	18	36	5	
18	45	24	5	43	354	2	12	8	333	42	44	47	6	
17	67	51	8	1	15	15	12	1	347	17	38	44	7	
16	83	10	11	29	35	17	13	37	1	49	30	39	8	
15	94	48	16	43	52	29	17	18	16	34	31	4	9	
14	104	58	25	39	66	47	24	21	30	44	37	16	10	
13	114	37	45	38	79	0	40	41	43	47	54	58	11	
12	124	29	130	2	90	0	114	11	55	32	138	34	12	



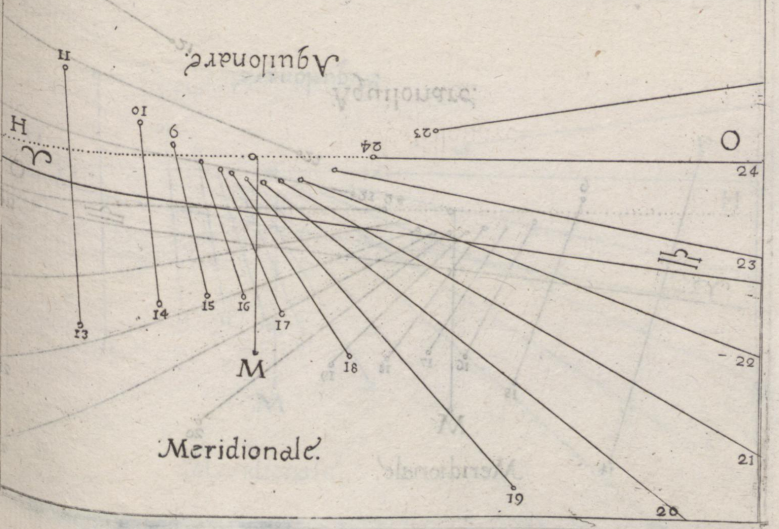
Tab. xiv.														Declinat. ad Occas. Gr. 6. Lat. Grad. 45.													
H. Merid.	Tropie. Capricor.								Aquinotialis.								Tropie. Canc.								H. Aquil.		
	Arcus.				Umbra.				Arcus.				Umbra.				Arcus.				Umbra.						
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.											
13	113	50	181	29	79	25	147	33	45	0	176	2	11														
14	103	54	50	11	68	31	44	22	33	24	59	10	10														
15	94	16	27	19	56	30	25	41	20	32	38	36	9														
16	85	10	17	35	42	30	17	54	6	28	31	32	8														
17	72	54	12	1	25	32	13	57	351	45	30	2	7														
18	58	13	8	23	5	58	12	8	337	9	32	58	6														
19	36	51	5	57	344	45	12	1	323	25	42	41	5														
20	4	39	4	43	324	43	13	37	310	57	73	17	4														
21	327	55	5	5	307	31	17	15	299	43	535	49	3														
22	300	44	6	53	293	13	24	21					2														
23	282	59	9	49	281	0	40	41					1														
24	270	0	14	8	270	0	114	11					24														
25	259	12	21	5									23														
26	249	32	34	33									22														
27	239	52	74	47									21														
														Alt. Pol.													
														P. M.													
														12 8													



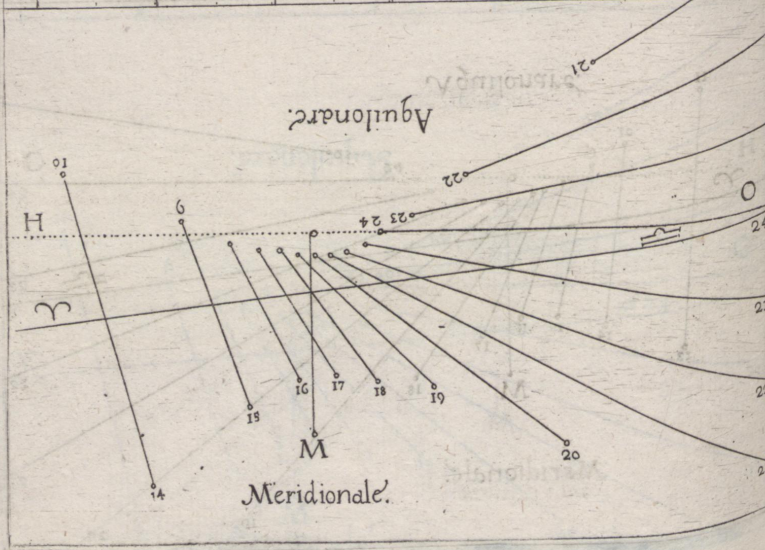
Tab. xv.		
H. Merid.	Trop.	
	Ar.	
	G.	
26	250	
25	260	
24	270	
23	280	
22	292	
21	308	
20	333	
19	9	
18	43	
17	67	
16	82	
15	94	
14	105	
13	114	
12	124	



Tab. xv. Declinat. ad Ort. Grad. 7. Lat. 45.													
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Canc.			H. Aquil.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	MP.	M.	G.	MP.	M.	G.	MP.	M.				
26	250	35	100	36									
25	260	19	39	49									
24	270	0	23	17									
23	280	17	15	23	280	35	189	51					
22	292	33	10	37	291	25	47	36					
21	308	57	7	25	303	15	26	45					
20	333	40	5	19	317	0	18	23					
19	9	13	4	37	333	30	14	11	321	17	89	8	5
18	43	47	5	32	353	2	12	11	333	28	46	20	6
17	67	18	7	44	14	20	11	35	346	56	34	10	7
16	82	58	11	6	34	16	13	35	1	24	30	6	8
15	94	52	16	16	52	1	16	44	16	10	30	38	9
14	105	6	24	34	66	34	23	21	30	27	36	9	10
13	114	45	42	59	78	56	38	0	43	36	52	3	11
12	124	32	120	32	90	0	99	52	55	28	120	34	12



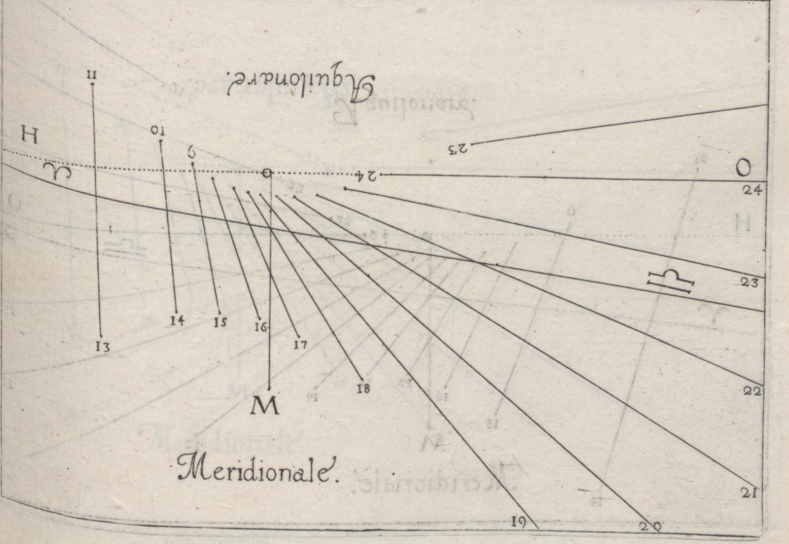
Tab. xvi.		Declinat. ad Occas. Gr. 7. Lt. Gr. 45.												H. Merid.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Merid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P	M	G.	M P	M	G.	M P	M					
13	113	48	267	49	79	25	202	20	45	2	226	46	11	
14	103	53	54	38	68	35	47	41	33	34	62	29	10	
15	94	14	28	43	56	45	26	45	20	49	39	29	9	
16	84	23	18	16	43	0	13	26	6	51	31	45	8	
17	73	6	12	27	26	30	14	10	332	9	29	50	7	
18	58	56	8	40	6	58	12	11	337	30	32	17	6	
19	38	27	6	6	345	40	11	55	323	40	41	6	5	
20	7	13	4	46	325	44	13	20	311	4	67	57	4	
21	330	3	4	56	307	59	16	46	299	44	374	22	3	
22	301	40	6	38	393	26	23	24					2	
23	283	10	9	28	281	4	38	20					1	
24	270	0	13	38	270	0	99	48					24	
25	259	15	20	15									23	
26	249	25	32	49									22	
27	239	46	68	30									21	
28	229	42	234	27									20	



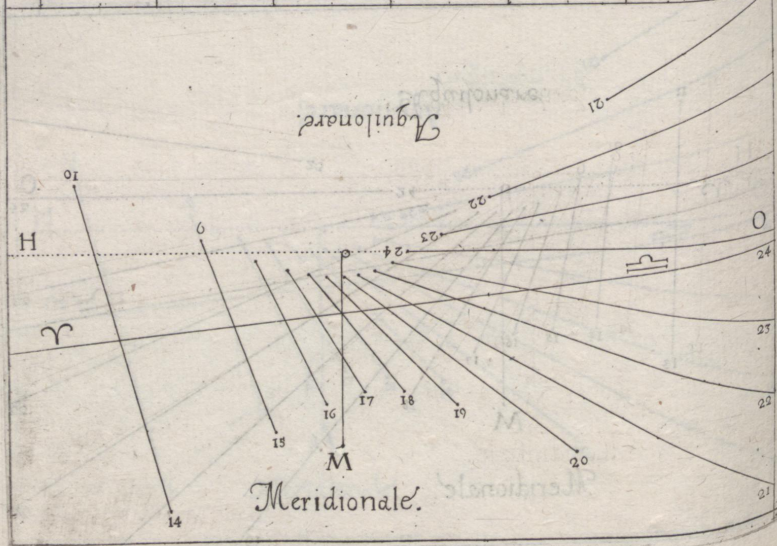
Tab. xv.			
H. Merid.	T	A	G
	26	256	
	25	260	
	24	270	
23	280		
22	292		
21	307		
20	331		
19	6		
18	42		
17	66		
16	82		
15	95		
14	105		
13	114		
12	124		

Tab. xvii. Declinat. ad Ort. Gr. 8 ad Lat. Gr. 45.

H. Merid.	Tropic Capric.		Aequinoctialis.		Tropic Canc.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
26	250	37 114	11				22
25	260	22 42	10				23
24	270	0 24	16				24
23	280	7 16	31 280	36 256	4		1
22	292	11 10	58 291	17 50	54		2
21	307	56 7	39 303	1 27	46		3
20	331	39 5	27 316	32 18	52		4
19	6	41 4	35 332	46 14	24 321	10 96	21 5
18	42	14 5	22 352	4 12	14 333	13 47	46 6
17	66	40 7	28 13	15 11	50 346	35 34	37 7
16	82	51 10	43 33	46 13	5 0	59 30	5 8
15	95	9 15	32 51	34 16	17 15	48 30	12 9
14	105	13 23	33 66	22 22	29 30	11 35	5 10
13	114	51 40	23 78	52 36	4 43	27 49	13 11
12	124	35 103	43 90	0 85	23 55	24 103	43 12

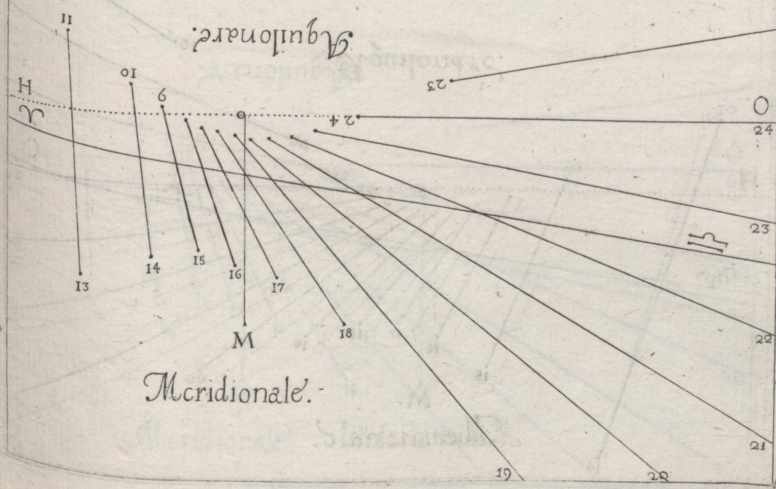


Tabxviii. Declinat. ad Occas. Grad. 8. ad Lat. Gr. 45.										
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Canc.		H. Merid.	
	Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.					
	G.	MP.	MG.	MP.	MG.	MP.	M.			
13	113	47 355	34 79	24 256	4 45	6 276	45 11			
14	103	50 58	59 68	43 50	54 33	45 65	43 10			
15	94	13 30	8 56	59 27	46 21	7 40	20 9			
16	84	24 18	57 43	28 18	52 7	15 31	56 8			
17	73	25 12	52 27	14 14	24 352	36 29	38 7			
18	59	38 8	56 7	56 12	14 337	51 31	39 6			
19	39	59 6	16 346	45 11	50 323	55 39	32 5			
20	9	43 4	47 326	14 13	5 311	11 62	49 4			
21	532	9 4	50 308	26 16	17 299	46 226	28 3			
22	302	40 6	25 293	38 22	29		2			
23	383	23 9	9 281	8 36	4		1			
24	270	0 13	10 270	0 85	23		24			
25	259	10 19	29				23			
26	249	19 31	11				22			
27	239	24 62	37				21			
28	229	41 509	24				20			
							Alt. Pol.			
							P. M.			
							12 . 14			

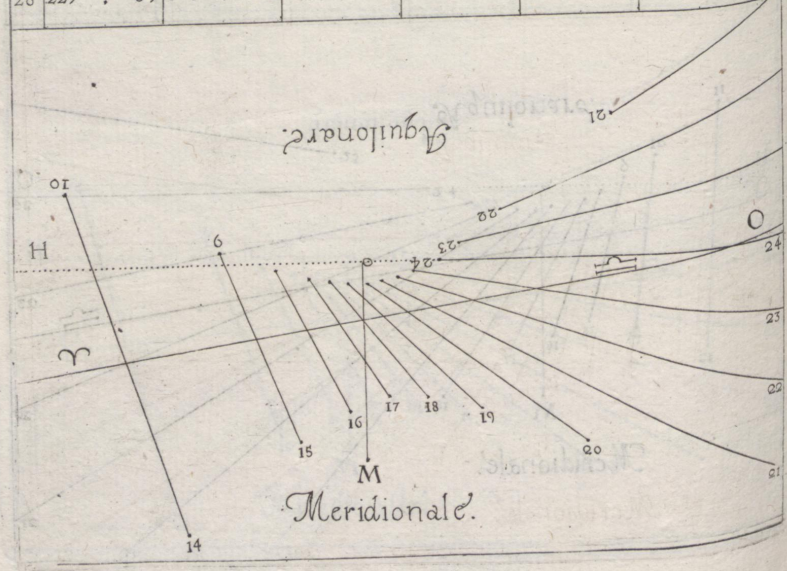


Tab. XVIII. Declinat. ad Ort. Grad. 9. Lat. Gr. 45.

H. Merid.	Tropic. Capric.			Æquinoctialis.			Tropic. Canc.			H. Aquilo
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		
	G.	MP.	M.	G.	MP.	M.	G.	MP.	M.	
26	250	39	140	48						22
25	260	26	45	16						23
24	270	0	25	24						24
23	280	6	16	31	280	38	412	29		1
22	291	42	11	20	291	15	54	58		2
21	306	59	7	53	302	48	28	58		3
20	328	48	5	34	316	5	19	24		4
19	4	4	4	34	332	4	14	39	321	6
18	40	29	5	12	351	4	12	18	333	1
17	66	3	7	13	12	14	11	40	346	16
16	82	42	10	22	33	0	12	49	0	38
15	95	3	15	0	51	5	15	49	15	25
14	105	23	22	36	66	9	21	38	29	57
13	115	0	38	16	78	47	34	5	43	15
12	124	40	93	1	90	0	77	0	55	20



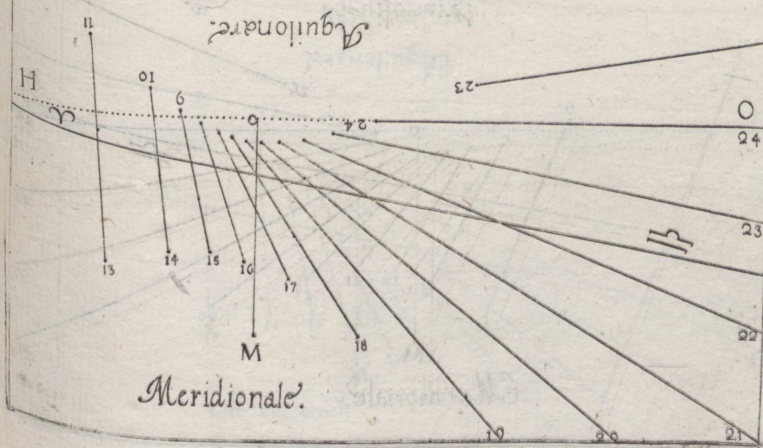
Tab. xx. Declinat. ad Occas. Grad. 9. Lat. 45.														H. Aquil.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	MP.	M	G.	M	P.	M	G.	M	P.	M			
13	113	46	705	4	79	22	412	24	45	6	460	43	11	
14	103	40	65	9	68	45	54	58	33	53	69	42	10	
15	94	12	31	47	57	12	28	58	21	21	41	21	9	
16	84	25	19	43	43	55	19	24	7	36	32	9	8	
17	73	39	13	18	27	56	14	39	352	57	29	27	7	
18	60	17	9	11	8	56	12	18	338	12	31	2	6	
19	41	22	6	26	347	46	11	40	324	9	38	9	5	
20	12	8	4	50	327	0	12	49	311	19	58	56	4	
21	334	25	4	43	308	55	15	49	299	47	185	6	3	
22	303	41	6	12	393	51	21	38					2	
23	283	46	8	50	281	13	34	5					1	
24	270	0	12	43	270	0	75	29					24	
25	259	5	18	46									23	
26	249	8	29	47									22	
27	239	35	58	8									21	
28	229	39	373	50									20	



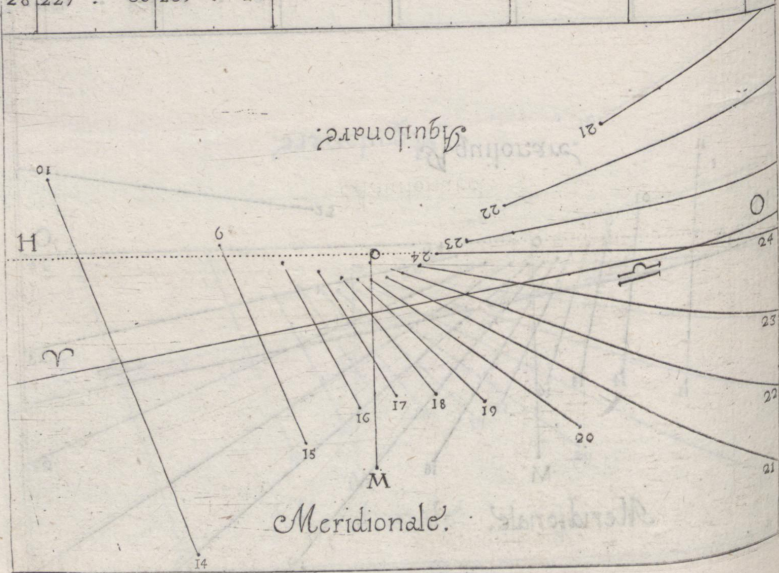
Tab. xx

H. Merid.	A
26	250
25	260
24	270
23	279
22	291
21	306
20	327
19	1
18	38
17	65
16	82
15	94
14	105
13	115
12	124

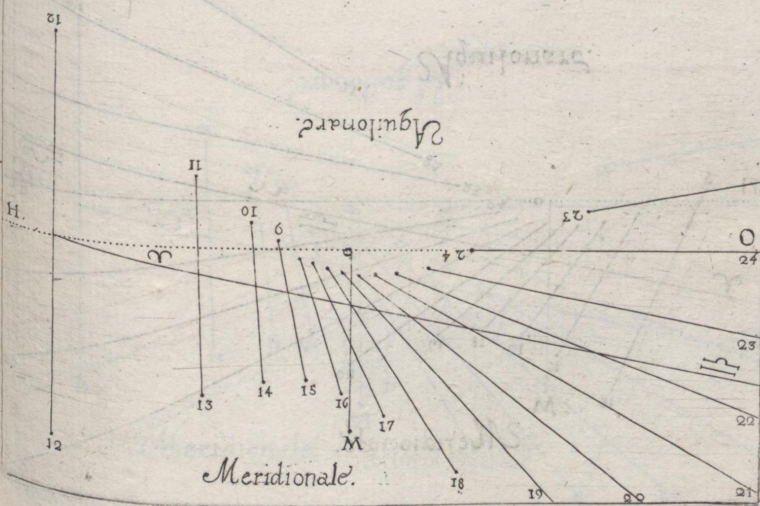
Ab. xx1.		Declinat. ad Ort. Grad. 10. Lat. 45.											
H. Merid.	Tropie.		Capric.		Aguinoctialis.				Tropie.		Canc.		H. Merid.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	
26	250	41	168	9									22
25	260	18	48	8									23
24	270	0	26	37									24
23	279	52	17	8	280	37							1
22	291	23	11	42	291	9	58	38					2
21	306	7	8	8	302	33	30	12					3
20	327	53	5	43	315	30	19	55					4
19	1	25	4	33	331	15	14	53	321	6	113	43	5
18	38	41	5	2	350	9	12	23	332	51	51	59	6
17	65	20	6	5	11	14	11	38	345	55	55	12	7
16	82	34	10	0	32	22	12	36	0	13	30	1	8
15	94	58	14	28	50	35	15	22	15	3	29	25	9
14	105	34	21	44	66	0	20	52	29	37	32	35	10
13	115	11	36	4	78	40	32	21	43	7	44	2	11
12	124	46	82	40	90	0	67	57	55	17	83	18	12



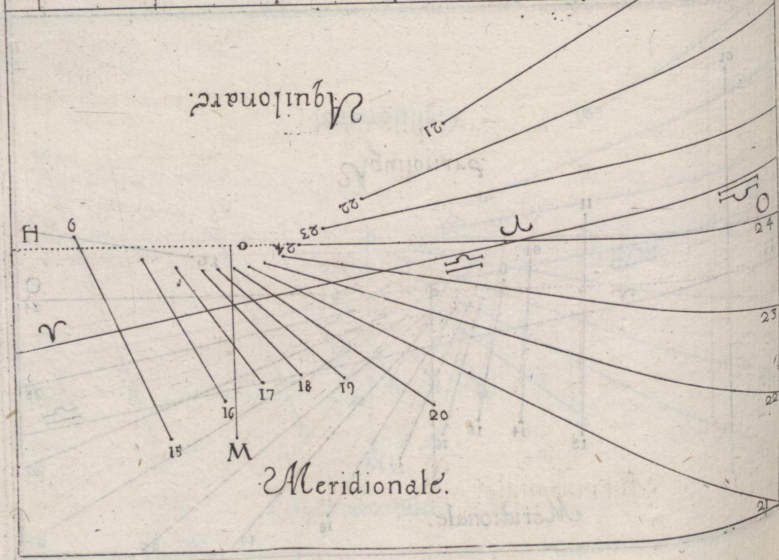
Tab. xxii												Declinat. ad Occas. Grad. 10. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Aquil.										
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.												
	G.	MP	P.	M	G.	MP	P.	M	G.	MP	P.	M											
14	103	43	71	2	68	51	58	38	34	2	73	49	10										
15	94	6	33	24	57	27	30	12	21	39	42	12	9										
16	86	6	20	30	44	30	19	55	7	50	32	16	8										
17	75	47	13	45	28	45	14	53	353	22	29	16	7										
18	61	33	9	27	9	51	12	23	338	34	30	29	6										
19	42	45	6	37	348	46	11	38	324	25	36	47	5										
20	14	31	4	53	327	38	12	36	311	28	54	58	4										
21	337	16	4	37	309	25	15	25	299	50	143	55	3										
22	304	21	5	59	294	0	20	52					2										
23	384	12	8	32	281	20	32	21					1										
24	270	0	12	22	270	0	67	57					24										
25	260	8	18	3									23										
26	249	0	28	23									22										
27	239	27	54	0									21										
28	229	38	239	24									20										
												Alt. Pol.											
												P. M.											
												12 . 23											



Tab. xxiii. Declinat. ad Ort. Grad. 11. Lat. 45.													
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Canc.		H. Aquil.				
	Arcus.		Vmbra.		Arcus.		Vmbra.						
	G.	MP.	MG.	MP.	MG.	MP.	M.						
26	250	42	237	36					22				
25	260	41	52	35					23				
24	270	0	27	53					24				
23	280	21	17	47					1				
22	290	58	12	5	291	564	57		2				
21	305	17	8	15	302	22	31	32	3				
20	326	18	5	51	315	14	20	29	4				
19	358	50	4	33	330	38	15	8	320	56	133	21	5
18	36	45	4	53	340	11	12	20	332	36	53	12	6
17	64	34	6	42	10	56	11	34	345	47	36	4	7
16	82	24	9	42	31	25	12	22	359	49	30	3	8
15	95	10	13	58	50	8	14	57	14	38	29	4	9
14	105	42	21	3	65	40	20	6	29	13	32	21	10
13	115	17	34	24	78	33	30	55	42	52	42	38	11
12	124	50	75	41	90	0	61	44	55	10	75	42	12
11					100	19	724	6	66	12	808	48	13

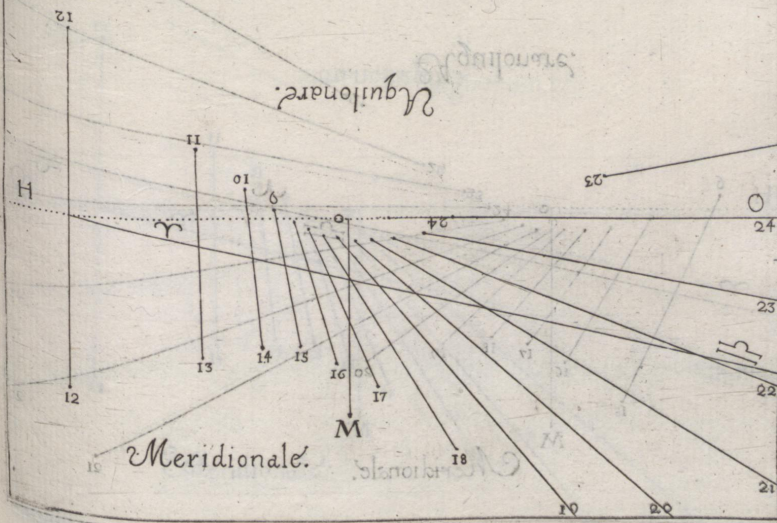


Tab. xxiv. Declinat. ad Occas. Grad. 11. Sgt. 45.														H. Aquil.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Aquil.	
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	MP	MG	MP	MG	MP	MG	MP	M					
14	103	41	80	32	68	55	64	57	34	20	78	55	10	
15	94	9	35	0	57	38	31	32	21	55	43	27	9	
16	84	29	21	21	44	46	20	29	8	19	32	29	8	
17	74	12	14	14	29	22	15	8	353	46	29	7	7	
18	61	29	9	49	10	49	12	26	338	56	29	54	6	
19	44	2	6	49	349	4	11	34	324	40	39	27	5	
20	16	53	4	57	328	35	12	22	311	37	51	54	4	
21	339	11	4	32	309	52	14	57	299	52	124	45	3	
22	305	39	5	46	294	20	20	6					2	
23	284	30	8	14	281	27	30	55					1	
24	270	0	11	52	270	0							24	
25	258	26	17	25	259	41							23	
26	248	50	27	11									22	
27	239	21	49	25									21	
28	229	36	197	7									20	
											Alt. Pol.			
											P. M.			
											12	26		



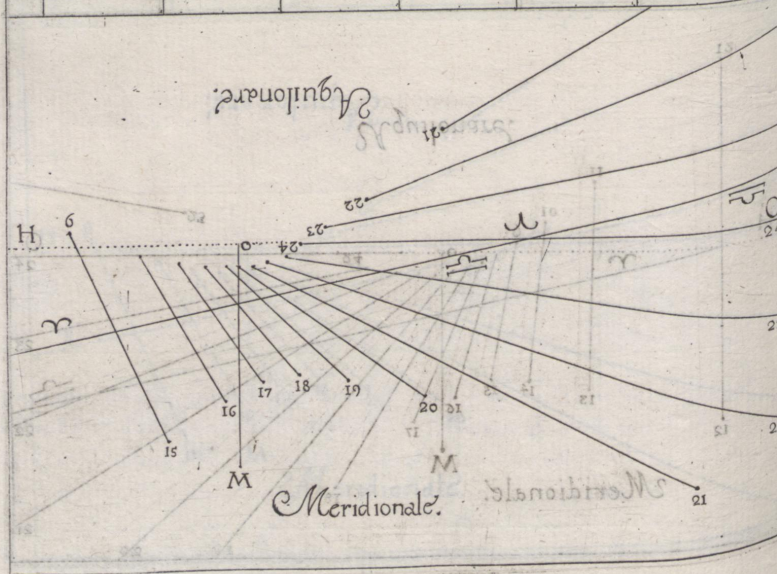
Tab. xxv.	
H. Merid.	Alt. Pol.
26	250
25	260
24	270
23	279
22	290
21	304
20	324
19	356
18	38
17	63
16	82
15	95
14	105
13	115
12	124
11	134

Tab. xxv. Declinat. ad Ort. Grad. 12. Lat. 45.									
El Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Canc.		H. Aquil.		
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
	G.	MP.	MG.	MP.	MG.	MP.	M.		
26	250	53 307	46	10	15 02	83 57	22		
25	260	34 56	27	18	25 12	74 55	23		
24	270	0 29	14	25	38 12	61 55	24		
23	279	50 18	26	32	51 11	48 55	1		
22	290	36 12	29	201	1 71	27 54	2		
21	304	33 8	38	302	9 34	51 8	3		
20	324	35 6	0	314	49 21	4 4	4		
19	356	14 4	35	330	3 15	25 320	51 149	10 5	
18	38	45 4	45	348	16 12	32 332	24 55	16 6	
17	63	46 6	27	9	12 11	30 345	17 36	34 7	
16	82	11 9	18	30	34 12	9 359	25 30	5 8	
15	95	15 13	29	49	36 14	33 14	14 28	43 9	
14	105	55 20	5	65	26 19	25 28	55 31	32 10	
13	115	25 32	40	78	35 29	14 42	49 40	44 11	
12	124	54 68	46	90	0 56	27 55	5 69	0 12	
11	134	51 1967	10	100	32 550	4 66	13 400	29 13	



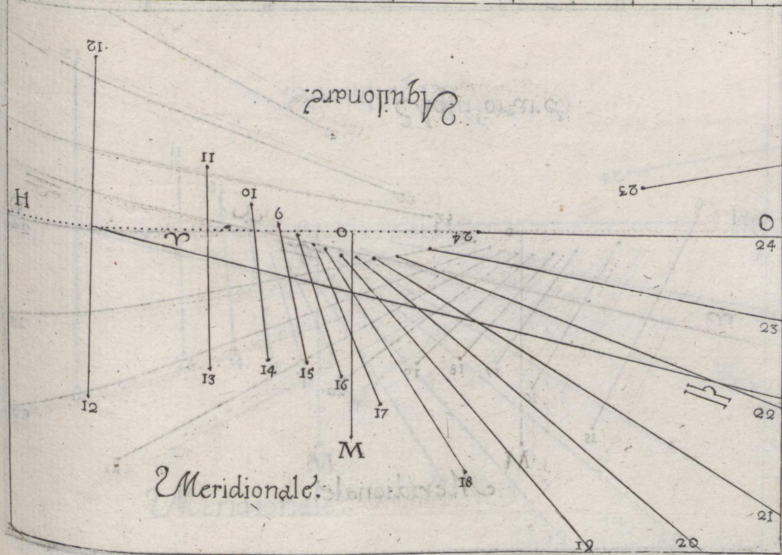
Tab. xxvi. Declinatio ad Octas. Gr. 12. Lat. Gr. 45.									
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancer.		H. Aquil.		
	Arcus.		Vmbra.		Arcus.			Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.		M.	
14	103	40 89	47 68	59 71	27 34	16 84	9	10	
15	94	7 37	32 57	51 32	51 22	9 44	35	9	
16	84	33 22	14 45	11 21	4 8	42 32	55	8	
17	74	29 14	43 29	57 15	25 354	10 28	58	7	
18	62	2 10	8 11	44 12	32 339	18 29	23	6	
19	45	19 7	1 350	48 11	38 324	57 34	26	5	
20	19	8 5	2 329	26 12	9 311	46 48	51	4	
21	341	39 4	28 310	24 14	33 399	55 105	36	3	
22	307	14 5	33 294	34 19	25	11	2		
23	284	53 7	56 281	25 29	14	81	1		
24	270	0 11	28 270	0 56	27	20	24		
25	257	15 16	48 259	28 550	4	2	23		
26	248	40 26	1 41	00 22	89	04	22		
27	239	15 47	5 33	0 30	60	24	21		
28	229	34 154	13	0 22	00	07	20		

Aquilonare.

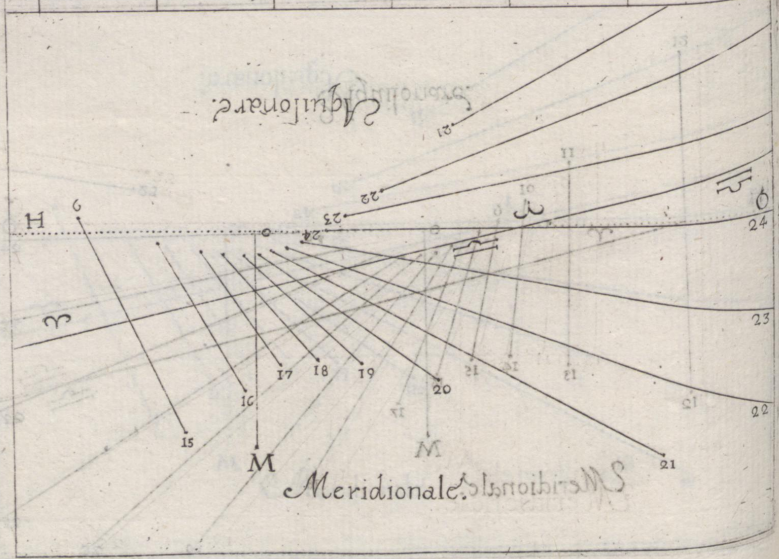


Tab. xxxvii. Declinatio ad Ortum. Grad. 13. Lat. Gr. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
26	250 . 43	1240 . 49					22
25	260 . 34	62 . 33					23
24	270 . 0	30 . 49					24
23	279 . 42	19 . 6					1
22	290 . 22	12 . 54	290 . 56	79 . 30			2
21	303 . 44	8 . 54	302 . 1	34 . 38			3
20	323 . 2	6 . 10	314 . 25	21 . 43			4
19	353 . 38	4 . 35	329 . 19	15 . 49	320 . 48	578 . 55	5
18	32 . 33	4 . 37	347 . 20	12 . 39	332 . 21	57 . 34	6
17	62 . 55	6 . 13	8 . 13	11 . 28	345 . 37	37 . 10	7
16	82 . 2	9 . 0	29 . 41	11 . 58	359 . 6	30 . 6	8
15	45 . 18	13 . 2	49 . 2	14 . 11	13 . 43	28 . 21	9
14	106 . 7	19 . 21	65 . 11	18 . 44	28 . 28	30 . 46	10
13	115 . 37	31 . 10	78 . 29	27 . 52	42 . 26	39 . 5	11
12	125 . 1	63 . 42	90 . 0	51 . 59	55 . 56	63 . 45	12
11	134 . 53	644 . 41	100 . 27	307 . 46	66 . 12	295 . 29	13

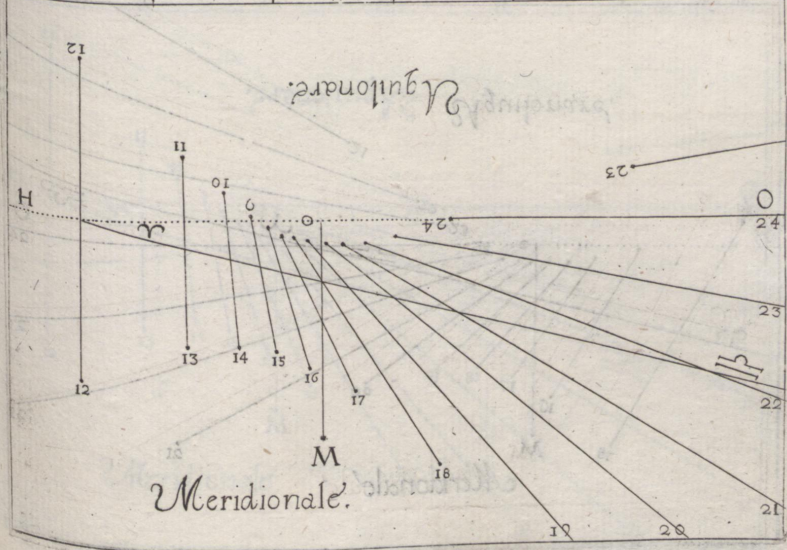


Tab. XXVIII.		Declinat. ad Ocasu. Grad. 15. Lat. Gr. 45.										H. Aguil.	
H. Merid.	Tropic. Capric.		Aguinoctialis.				Tropic. Cancer.					H. Aguil.	G.
	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	M.		
14	103.	38	103	11	69	4	79	30	34	22	91	10	10
15	94	6	39	54	57	59	34	37	22	24	45	49	9
16	84	38	23	11	45	35	21	43	9	3	33	12	8
17	74	29	15	16	30	41	15	43	354	35	28	50	7
18	62	36	10	27	12	40	12	39	339	42	28	53	6
19	46	36	7	11	351	47	11	28	325	13	33	24	5
20	22	20	5	6	330	19	11	57	311	56	46	20	4
21	345	40	4	25	310	58	14	11	299	59	94	20	3
22	308	41	5	15	294	40	18	44				2	
23	285	28	7	39	281	31	27	52				1	
24	270	0	11	4	270	0	51	59				24	
25	258	21	16	10	259	33	307	46				23	
26	248	30	24	53								22	
27	239	6	44	16								21	
28	229	30	133	35								20	

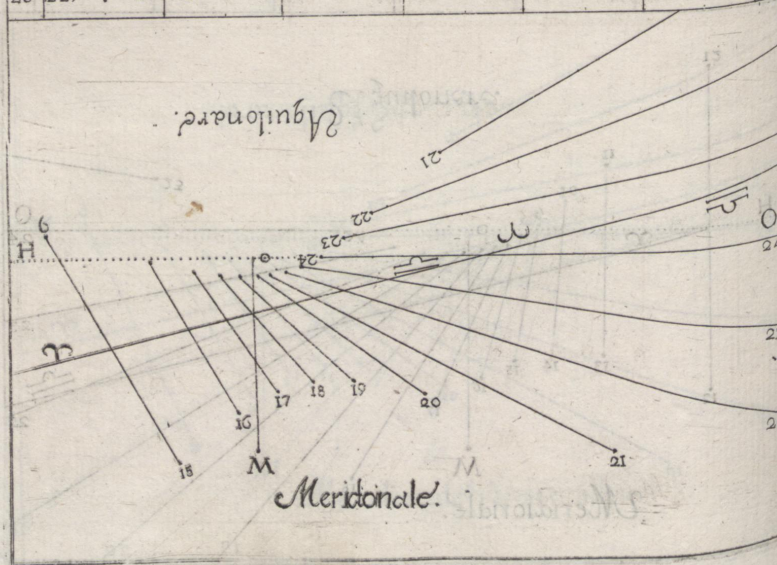


Tab. XXVIII. Declinat. ad Ortum Grad. 14. Lat. Gr. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canceri.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
26	250	45 19 67	10				22
25	260	36 68	17				23
24	270	0 32	23				24
23	279	31 19	54				1
22	289	55 13	20	290	54 88	37	2
21	302	59 9	10	301	47 36	15	3
20	321	32 6	20	314	3 22	20	4
19	351	2 4	37	328	38 16	0 320	3 5
18	30	25 4	29	346	28 12	43 332	2 59
17	62	2 5	59	7	11 11	23 344	40 37
16	81	51 8	40	28	50 11	43 358	37 30
15	95	32 12	34	48	31 13	48 13	25 28
14	106	24 18	39	64	55 18	6 28	4 30
13	115	45 29	45	78	25 26	36 42	2 37
12	125	8 58	53	90	0 48	8 54	52 58
11	134	53 89 6	47	100	34 213	32 66	11 193

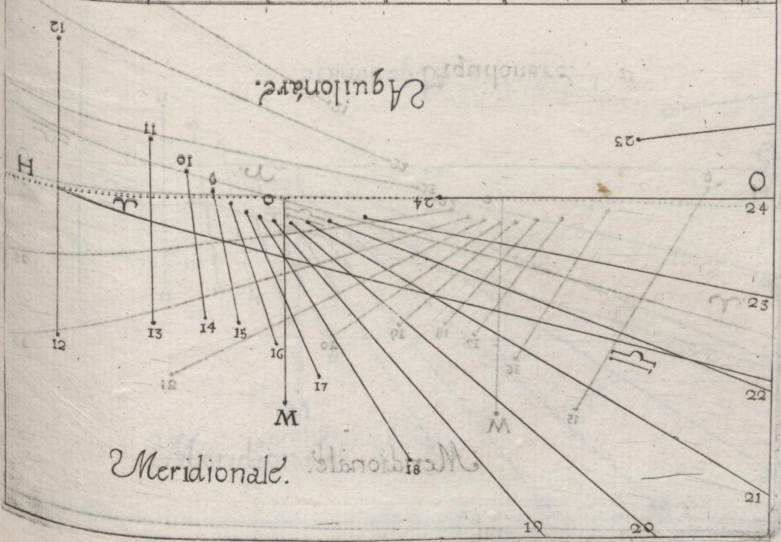


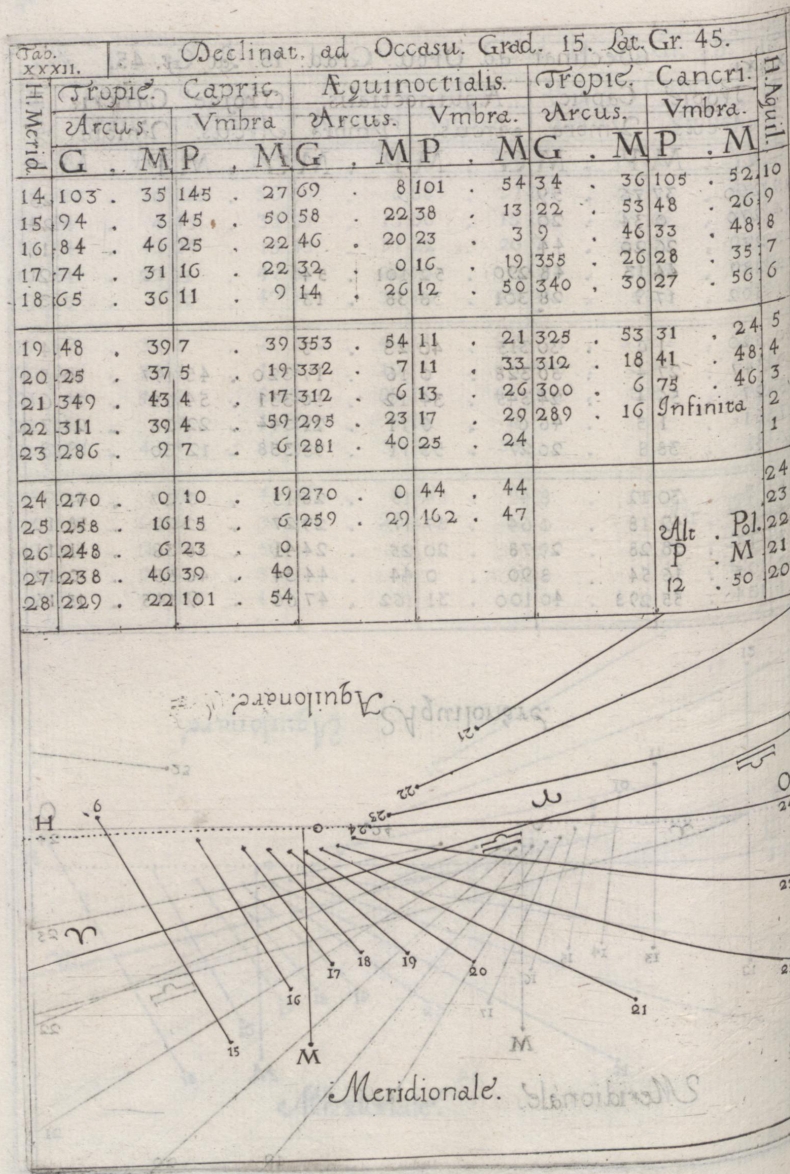
Tab. xxx.		Declinat. ad Occasu. Grad. 14. Lat. Gr. 45.												H. Aquil.	
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquil.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	MP	MG	MP	MG	MP	MG	MP	M						
14	103	36	125	56	69	688	37	34	29	97	44	10			
15	94	4	45	33	59	13	36	15	22	39	46	58	9		
16	84	42	24	13	45	57	22	20	9	24	33	29	8		
17	74	22	15	47	31	22	16	0	355	0	28	41	7		
18	63	6	10	47	13	35	12	43	340	5	28	23	6		
19	47	32	7	26	352	49	11	23	325	33	32	21	5		
20	23	32	5	12	331	10	11	43	312	6	43	55	4		
21	346	54	4	20	311	29	13	848	300	3	82	56	3		
22	310	1	5	10	295	5	18	6				2			
23	285	44	7	22	281	35	26	36				1			
24	270	0	10	41	271	0	48	8				24			
25	258	20	15	38	259	26	213	32				23			
26	248	20	23	56								22			
27	238	57	41	51								21			
28	229	27	115	48								20			
												Alt. Pol.			
												P. M.			
												12 . 43			



45.	H. Aquil.
ri	
bra.	
M.	
44 10	
58 9	
29 8	
41 7	
23 6	
21 5	
55 4	
36 3	
17 2	
1 1	
24	
Pol. 23	
M. 22	
43 21	
20	

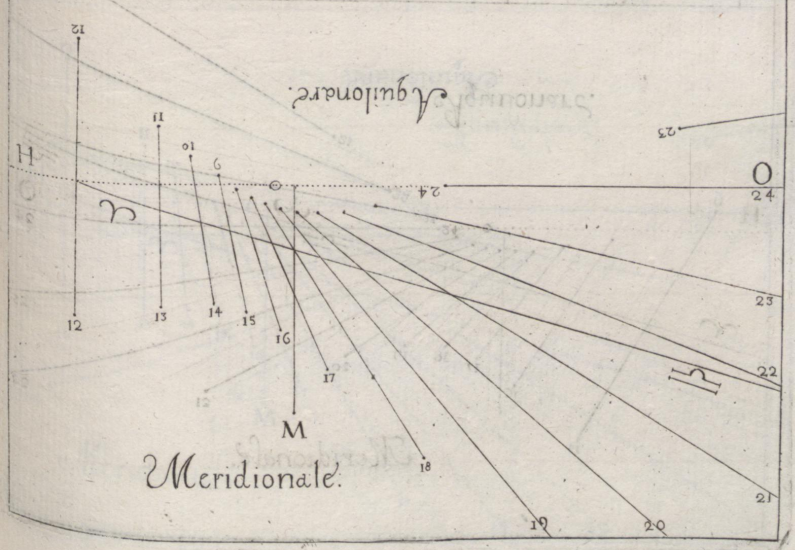
Declinat. ad Ortu. Grad. 15. Lat. Gr. 45.									
Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.					
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
G.	MP.	MG.	MP.	MG.	MP.				
25	260	37 76	59	101	84	23	23	23	23
24	270	0 34	20	81	88	24	24	24	24
23	279	26 20	44	68	88	25	25	25	25
22	289	44 13	48	290	52 101	54	54	54	54
21	302	17 9	28	301	38 38	13	13	13	13
20	320	1 6	30	313	40 23	6 3	6	6	6
19	347	27 4	30	328	0 16	19	320	45 107	10 5
18	27	56 4	24	345	34 12	50	331	54 62	39 6
17	61	1 5	46	6	6 11	21	344	22 38	21 7
16	81	38 8	20	27	53 11	33	358	12 30	28 8
15	95	30 12	8	47	54 13	26	13	10 27	43 9
14	109	42 18	0	64	37 17	29	27	52 29	18 10
13	115	88 28	29	78	20 25	24	41	58 36	11 11
12	123	16 54	8	90	0 44	44	54	46 55	10 12
11	134	35 298	40	100	31 162	47	66	9 145	15 13

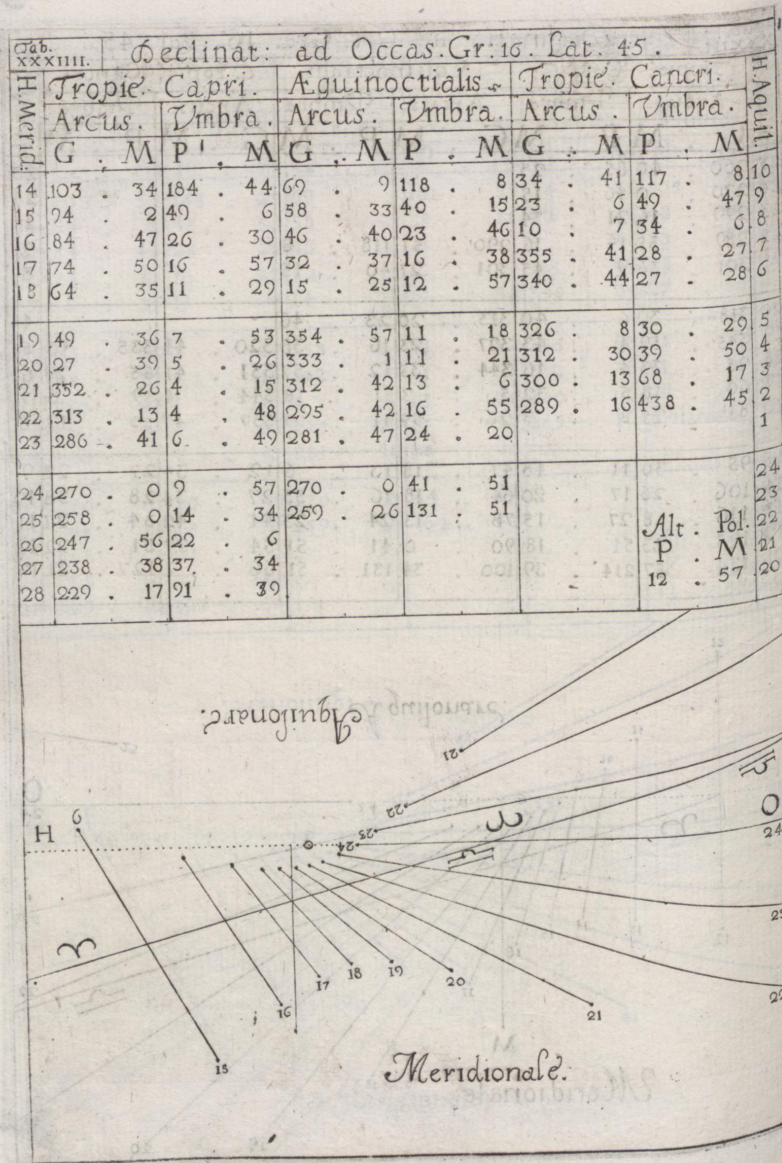




45.	
cri.	H. Aquil.
bra.	
M.	
52.10	
26.9	
48.8	
35.7	
56.6	
24.5	
48.4	
46.3	
nita	2
1	
24	
23	
Pol.	22
M.	21
50	20

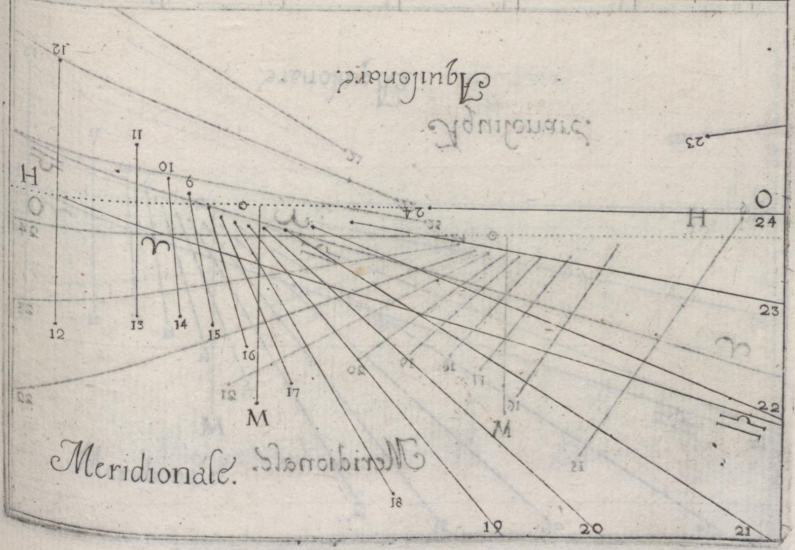
Tab. XXXIII.		Declinatio ad Ort. Gra. 16. Lat. 45.											
H. Merid.	Tropic. Capric.		Equinoctialis.				Tropic. Cancr.				H. Aquil.		
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.			Umbra.	
	G.	MP	MG	MP	MG	MP	MG	MP	M				
25	260	40 85	23									23	
24	270	0 36	15									24	
23	279	16 21	34									1	
22	289	35 14	16	290	51 118	8						2	
21	301	36 9	45	301	27 40	15						3	
20	318	30 6	40	313	20 23	46						4	
19	345	59 4	43	327	23 16	38 320	41 335	15 5				5	
18	25	35 4	16	344	35 12	57 331	41 65	29 6				6	
17	60	8 5	32	5	3 11	18 344	4 39	3 7				7	
16	81	25 8	3	26	59 11	21 357	47 30	12 8				8	
15	95	36 11	48	47	18 13	6 12	34 27	27 9				9	
14	106	26 17	20	64	18 16	55 27	34 28	38 10				10	
13	116	18 27	15	78	13 24	23 41	42 34	37 11				11	
12	125	23 51	18	90	0 41	51 54	57 51	22 12				12	
11	134	57 214	39	100	34 131	51 66	7 127	21 13				13	

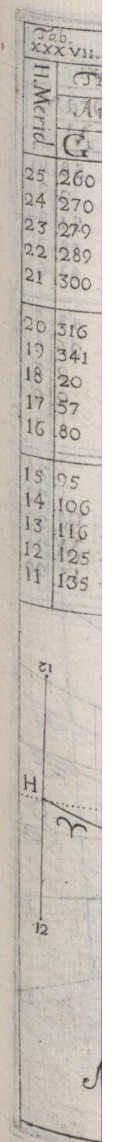
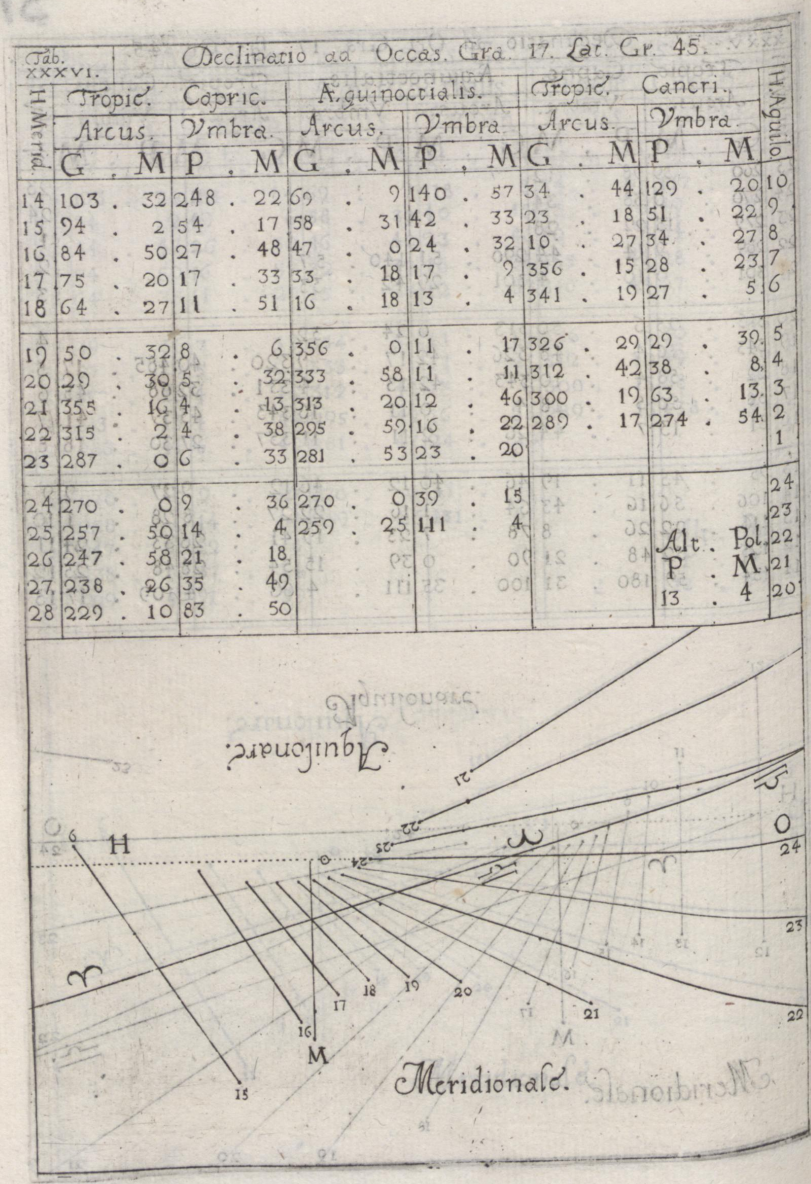




11.	H. Aquil.
ra.	
M	
8 10	
47 9	
6 8	
27 7	
28 6	
29 5	
50 4	
17 3	
45 2	
1	
24	
23	
Pol.	
22	
M	
21	
57	
20	

Tab. xxxv. Declinatio ad Ort. Gra. 17 Lat. Gr. 45.													
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Canceri.			H. Aquilo			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P.	M	G.	M	P.	M	G.		M	P.	M
25	260	39	98	12	27	0	11	3	22	84	23	23	
24	270	0	38	34	28	0	11	3	23	84	23	24	
23	279	15	22	28	29	0	11	3	24	84	23	1	
22	289	9	14	44	290	51	140	57	25	84	23	2	
21	301	0	10	4	301	29	42	33	26	84	23	3	
20	316	25	6	50	313	0	24	32	27	84	23	4	
19	343	36	4	48	326	42	17	9	320	40	485	17 5	
18	22	58	4	10	343	42	13	4	331	32	68	45 6	
17	58	50	5	18	4	0	11	16	343	45	39	41 7	
16	81	15	7	44	26	2	11	11	357	27	30	18 8	
15	95	45	11	19	46	40	12	46	12	9	27	9 9	
14	106	56	16	43	64	1	16	22	27	8	28	1 10	
13	116	22	26	8	78	17	23	19	41	26	33	24 11	
12	125	32	48	21	90	0	39	15	54	28	48	25 12	
11	134	59	180	31	100	35	111	4	66	4	109	17 13	

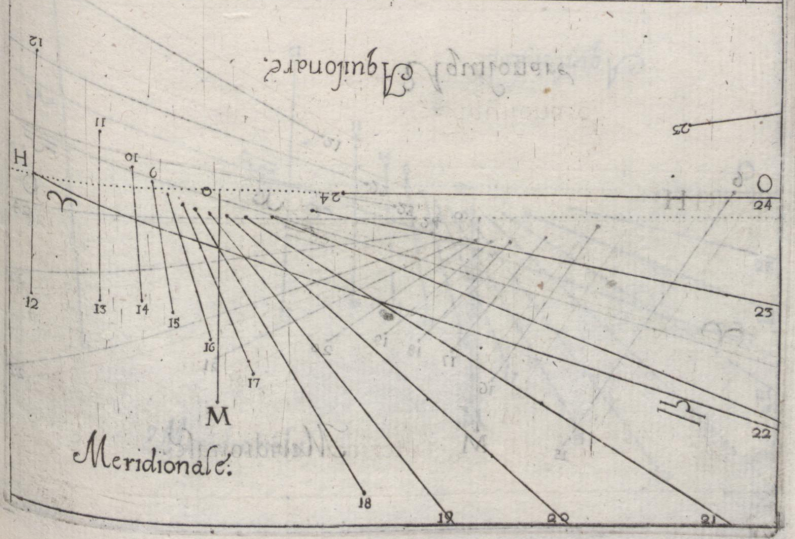




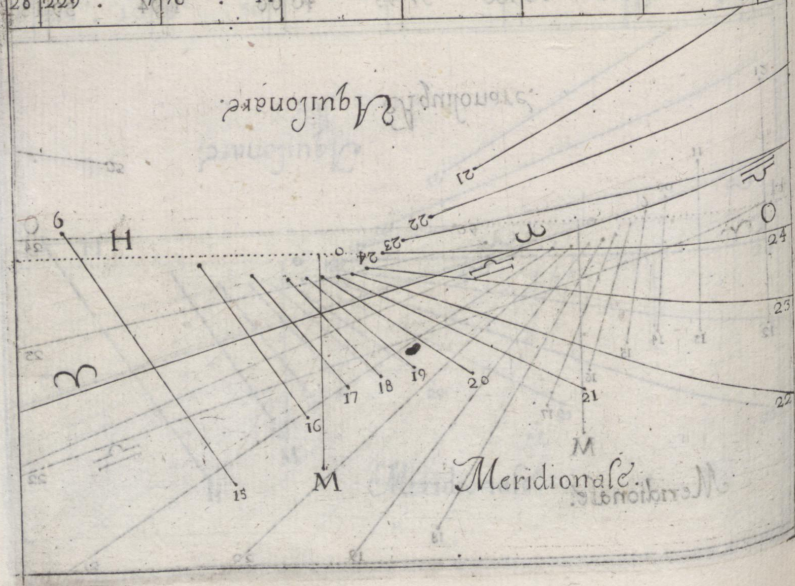
145

Tab. XXXVII. Declinatio ad Ortum Gra. 18. Lat. Gr. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo.
	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	
G.	M	P	M	G	M	P	M
25	260	41	113	33			23
24	270	0	41	0			24
23	279	6	23	25			1
22	289	6	15	15	290	50 174	2
21	300	0	10	21	301	9 45	3
20	316	7	7	3	312	39 25	4
19	341	45	4	52	326	12 17	5
18	20	15	4	5	342	49 13	6
17	57	59	5	6	2	56 11	7
16	80	58	7	27	25	3 11	8
15	95	47	10	57	46	0 12	9
14	106	20	16	9	63	39 15	10
13	116	33	25	6	78	0 22	11
12	125	40	45	25	90	0 36	12
11	135	2	149	10	100	37 95	13
						40 66	
						1 94	



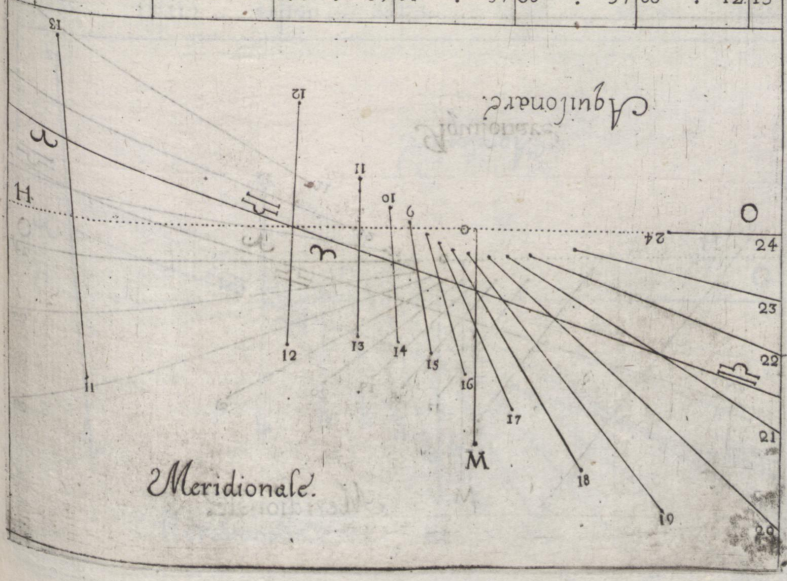
Tab. xxxviii.		Declinatio. ad Occas. Gra. 18. Lat. Gra. 45.												H. Aquilo					
H. Meridi.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo						
	Arcus		Umbra		Arcus.		Umbra		Arcus.		Umbra								
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M							
14	103		33	385		25	69	10	174		32	34		50	145		58	10	
15	94		0	57		42	58		51	45		9	23		32	53		29	
16	84		52	29		8	47		21	25		21	10		48	34		51	8
17	75		24	18		13	33		48	17		19	35	6	42	28		18	7
18	64		57	12		14	17		11	13		13	34	1	45	26		41	6
19	51		27	8		21	25	7	4	11		15	32	6	52	28		53	5
20	31		24	5		40	33	4	57	11		1	31	2	56	36		26	4
21	358		7	4		12	31	4	0	12		27	30	0	25	58		2	3
22	316		56	4		28	29	6	21	15		51	28	9	18	20	2	2	2
23	387		47	6		18	28	2	0	22		23							1
24	270		0	9		16	27	0	0	36		56							24
25	253		39	13		36	25	9	23	9		40							23
26	247		32	20		30			28	0									22
27	238		19	34		1			26	0									21
28	229		7	76		11			25										20
													Alt. Pl.		P. M.				
													13		13				



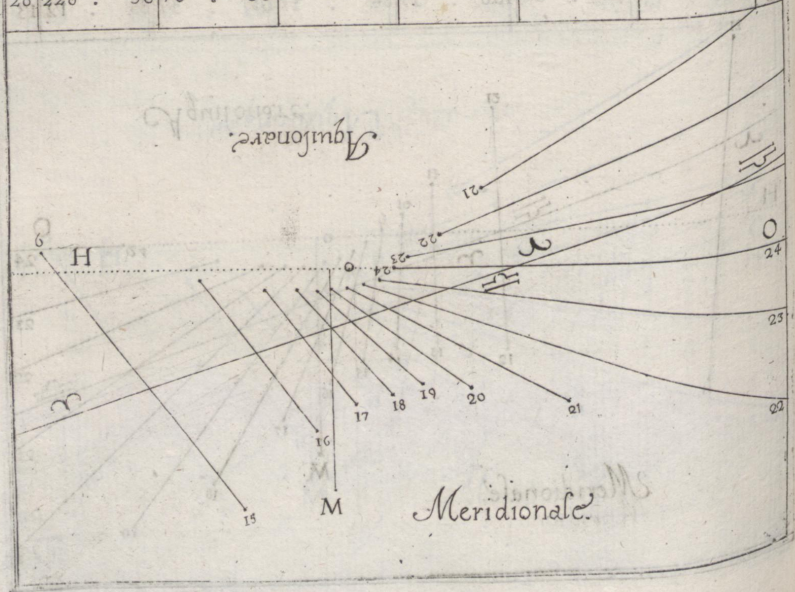
Tab. xxxviii.		Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.	
H. Meridi.	Alt.	Arcus		Umbra		Arcus	
25	260						
24	270						
23	279						
22	288						
21	299						
20	314						
19	338						
18	17						
17	56						
16	80						
15	95						
14	107						
13	116						
12	126						
11	135						

Tab. XXXVIII. Declinatio ad Ort. Gra. 19 Gr. Gr. 45.

Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Agulo.
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	M P.	M G.	M P.	M G.	M P.	M
25 260 .	42 142 .	4				23
24 270 .	0 43 .	59				24
23 279 .	4 24 .	20				1
22 288 .	38 15 .	47 290 .	40 232 .	53		2
21 299 .	49 10 .	41 301 .	2 48 .	8		3
20 314 .	56 7 .	15 312 .	10 26 .	15		4
19 338 .	56 4 .	57 325 .	37 17 .	42 320 .	40 1719 .	2 5
18 17 .	24 4 .	0 341 .	57 13 .	22 331 .	14 76 .	22 6
17 56 .	17 4 .	53 1 .	50 11 .	14 343 .	12 41 .	11 7
16 80 .	39 7 .	10 24 .	1 10 .	51 356 .	38 30 .	27 8
15 95 .	56 10 .	34 45 .	18 12 .	8 11 .	37 26 .	40 9
14 107 .	3 15 .	37 63 .	18 15 .	19 26 .	19 26 .	49 10
13 116 .	48 24 .	8 77 .	53 21 .	27 40 .	52 31 .	8 11
12 126 .	51 43 .	6 90 .	0 34 .	47 54 .	9 43 .	6 12
11 135 .	7 131 .	37 100 .	39 84 .	37 65 .	57 85 .	12 13

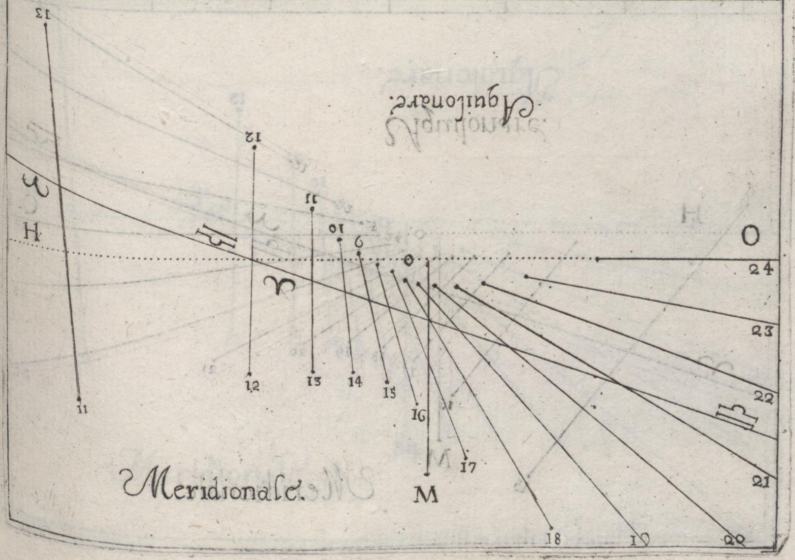


xx ^{7b} xx.		Declinatio. ad Occas. Gra. 19. Lat. Gr. 45.											
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.				H. Aquil.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.			Vmbra.	
	G.	M P.	M	G.	M	P.	M	G.	M	P.		M	
14	103	34	762	4	69	11	232	53	34	52	169	11	10
15	94	0	63	48	58	58	48	8	23	42	54	50	9
16	84	55	30	44	47	41	26	15	11	7	35	12	8
17	75	40	18	36	34	23	17	42	357	6	28	13	7
18	65	18	12	38	18	3	13	22	342	10	26	18	6
19	52	19	8	35	358	10	11	14	327	13	28	7	5
20	33	3	5	49	335	59	10	51	315	10	34	57	4
21	0	56	4	13	314	42	12	8	300	31	54	10	3
22	319	2	4	18	296	42	15	20	289	20	164	35	2
23	288	23	6	2	282	7	21	27	01				1
24	270	0	8	56	270	0	34	47	01	02			24
25	257	29	13	8	259	21	83	37	21	02			23
26	247	13	20	16					19	03			22
27	238	4	32	32					14	04			21
28	228	58	70	35					10	05			20
											Alt. Pol.		
											P. M.		
											13		



Tab. xxxxi. Declinatio. ad Ort. Gra. 20. Lat Gra. 45.

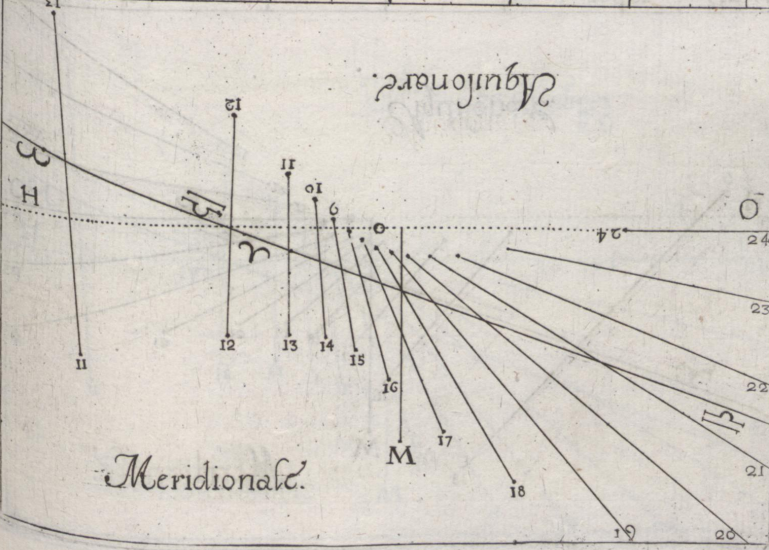
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G . M P . M G . M P . M G . M P . M							
25	260	41 154	32				23
24	269	48 27	55				24
23	278	51 25	45				1
22	287	45 16	26 290	34 358	39		2
21	299	12 11	4 300	47 51	51		3
20	313	29 7	30 311	54 27	19		4
19	336	21 5	5 324	54 18	9		5
18	13	57 3	56 340	56 13	33 331	0 81	40 6
17	54	2 4	40 0	32 11	13 342	47 42	12 7
16	80	15 6	52 22	46 10	41 356	8 31	7 8
15	95	39 10	9 44	23 11	48 10	39 26	26 9
14	106	40 15	0 62	46 14	47 25	47 26	16 10
13	116	52 23	3 77	38 20	33 40	16 30	7 11
12	125	48 40	7 90	0 32	44 53	52 40	22 12
11	135	15 112	43 100	34 73	43 65	48 74	39 13



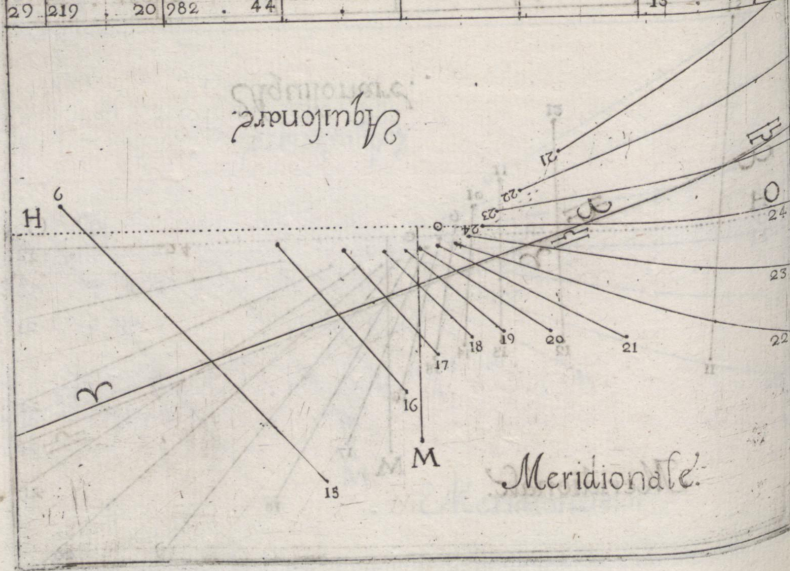
Tab.
XXXXIII.

Declinatio ad Ort. Gra. 21. Lat. Gr. 45.

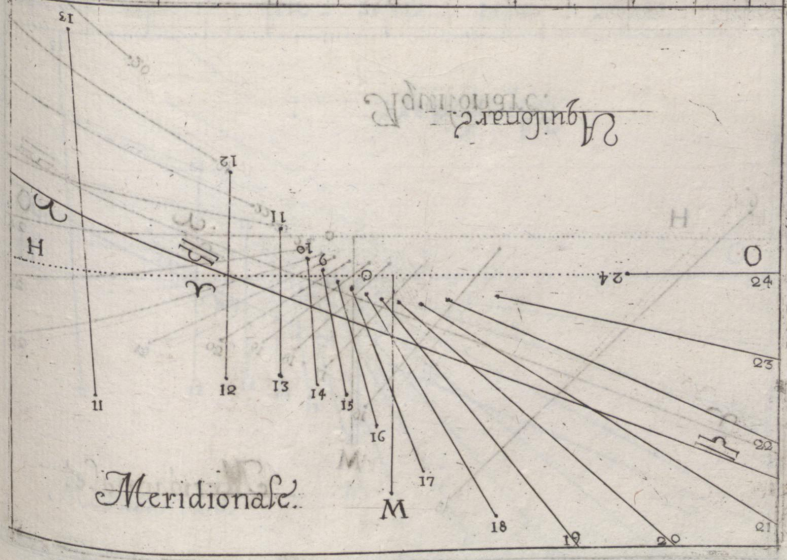
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo	
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.		
G.	MP.	M	G.	MP.	M	G.	MP.	M
25	260 . 44	250 . 24						23
24	270 . 0	51 . 26						24
23	278 . 56	26 . 47						1
22	288 . 4	16 . 56	290 . 41	644 . 41				2
21	298 . 46	11 . 21	300 . 50	55 . 11				3
20	312 . 41	7 . 40	311 . 44	28 . 11				4
19	334 . 30	5 . 8	324 . 32	18 . 29				5
18	11 . 29	3 . 53	340 . 15	13 . 40	330 . 59	85 . 53	6	
17	53 . 59	4 . 30	359 . 51	11 . 13	342 . 39	42 . 51	7	
16	80 . 6	6 . 36	21 . 56	10 . 33	355 . 51	30 . 40	8	
15	96 . 10	9 . 50	43 . 50	11 . 33	10 . 22	26 . 12	9	
14	107 . 28	14 . 34	62 . 39	14 . 19	25 . 30	25 . 46	10	
13	117 . 15	22 . 22	77 . 39	19 . 50	40 . 16	29 . 8	11	
12	126 . 12	38 . 47	90 . 0	31 . 11	53 . 49	38 . 47	12	
11	135 . 16	102 . 56	100 . 42	67 . 3	65 . 50	68 . 16	13	
10					76 . 27	654 . 54	14	



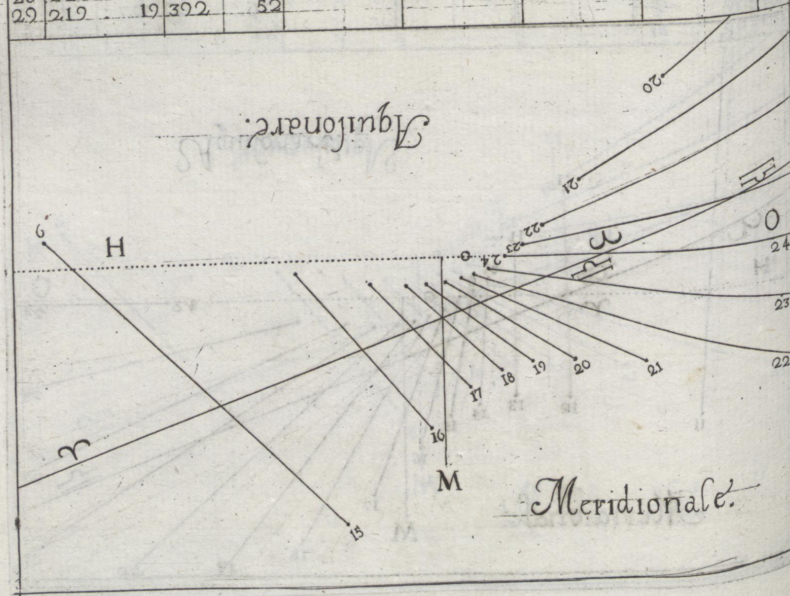
Tab. xxxxiii.		Declinatio ad Octas. Gra. 21. lat. Gr. 45.										H. Merid.		
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.							
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.					
14					69	19	644		41	34	57	288	21	10
15	93	59	79	2	59	10	55		11	24	7	58	51	9
16	84	56	34		12	48	16	28		11	11	47	36	8
17	76	0	20		26	35	28	18		20	357	38	28	7
18	66	2	13		28	19	45	13		40	343	3	25	6
19	55	57	9		7	0	9	11		13	327	57	26	5
20	36	24	6		7	338	4	10		33	313	39	32	4
21	6	38	4		14	316	10	11		33	300	45	47	3
22	325	35	4		0	297	21	14		19	289	23	111	2
23	289	43	5		33	282	21	19		50				1
24	270	0	8		17	270	0	31		11				24
25	257	6	12		16	259	18	67		3				23
26	246	44	18		24									22
27	237	39	29		45									21
28	228	43	60		44									20
29	219	20	982		44									19



Tab. xxxv. Declinatio ad Ort. Gra. 22. Lat. 45.									
Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.					
Arcus.	Umbra	Arcus.	Umbra	Arcus.	Umbra				
G.	MP.	MG.	MP.	MG.	MP.	M.			
25 260	44 332	33							23
24 270	00 54	38 11	03 20	03 01	03 52				24
23 279	11 28	41 01	03 37	04 11	04 22				1
22 287	52 17	31 290	03 761	43					2
21 298	29 11	42 300	40 59	15					3
20 311	31 7	53 311	27 29	10					4
19 332	22 5	15 324	00 18	53					5
18 8	21 3	48 339	27 13	49 330	51 91				6
17 51	48 4	16 358	30 11	14 342	57 43	40			7
16 79	49 6	21 20	55 10	28 355	27 30	45			8
15 96	18 9	30 43	07 11	17 9	55 25	58			9
14 107	43 14	5 62	11 13	57 25	5 25	16			10
13 117	32 21	33 77	32 19	7 39	57 28	12			11
12 126	22 36	52 20	0 19	42 53	38 36	52			12
11 135	20 92	11 100	46 61	16 65	46 62	22			13
10				76	27 327	17			14



Tab. XXXXVI.		Declinatio ad Occas. Gra. 22. Lat. 45.										H. Merid.
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		Cancr.				H. Merid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.					
	G.	M P.	MG.	M P.	MG.	M P.	MG.	M P.	M			
14							35	2 282	25	10		
15	93	58 88	10 59	20 59	15 24	19 60			59	9		
16	84	59 36	4 48	33 29	10 12	2 36			26	8		
17	76	8 21	13 36	0 18	53 358	24 28			3	7		
18	66	25 13	54 20	33 13	49 343	31 25			10	6		
19	54	47 9	23 1	21 11	14 328	21 26			3	5		
20	38	4 6	16 339	5 10	28 313	55 31			0	4		
21	9	28 4	16 316	53 11	17 300	54 44			22	3		
22	325	57 3	52 297	49 13	57 289	26 24			46	2		
23	290	21 5	19 282	29 19	7							
24	270	0 7	59 270	0 29	42						24	
25	256	50 11	52 259	14 61	16						23	
26	246	32 17	46								22	
27	237	20 28	31								21	
28	228	38 56	37								20	
29	219	19 392	52								19	

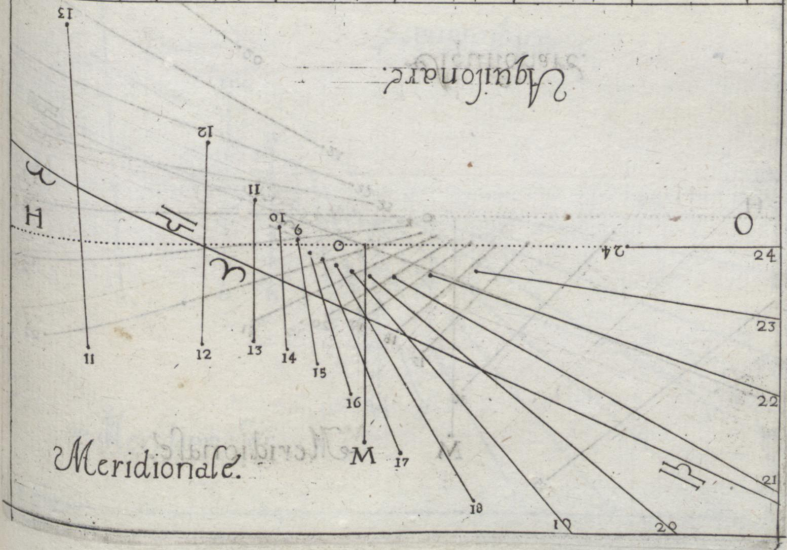


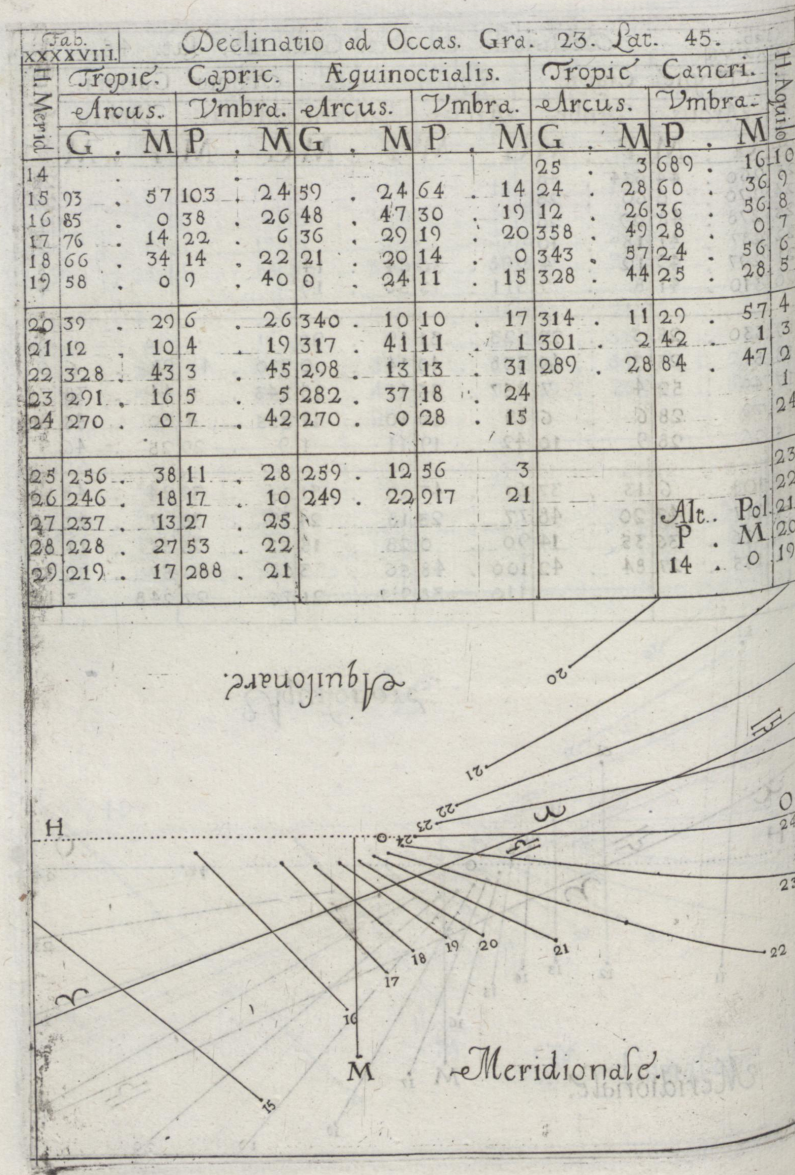
Tab. XXXXVII.		Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo	
H. Merid.	Arc.	Arcus.		Vmbra.		Arcus.		Vmbra.	
		G.	M P.	MG.	M P.	MG.	M P.	MG.	M P.
23	260								
24	270								
23	278								
22	287								
21	297								
20	310								
19	330								
18	5								
17	49								
16	79								
15	96								
14	108								
13	117								
12	126								
11	135								
10									

Tab. XXXVII

Declinatio ad Ort. Gra. 23. Lat. 45.

H. Merid.	Tropie Capric.			Aequinoctialis.			Tropie Cancr.			H. Aquilo.			
	Arcus.			Umbra.			Arcus.				Umbra.		
	G.	M	P.	M	G.	M	P.	M	G.		M	P.	M
25	260	44	634	48									23
24	270	0	60	28									24
23	278	48	29	28									1
22	287	41	18	10									2
21	297	40	12	4	298	36	64	14					3
20	310	41	8	7	311	13	30	19					4
19	330	28	5	22	323	31	19	20					5
18	3	23	3	49	338	40	14	0	330	45	98	6	6
17	49	52	4	7	357	36	11	15	343	8	44	38	7
16	79	28	6	6	19	50	10	17	355	4	30	55	8
15	96	28	9	10	42	19	11	1	9	29	25	46	9
14	108	6	13	37	61	47	13	31	24	39	24	48	10
13	117	47	20	48	77	23	18	24	39	38	27	22	11
12	126	36	35	14	90	0	28	15	53	26	35	14	12
11	135	27	84	42	100	48	56	3	65	42	57	56	13
10					110	38	917	21	76	27	248	3	14





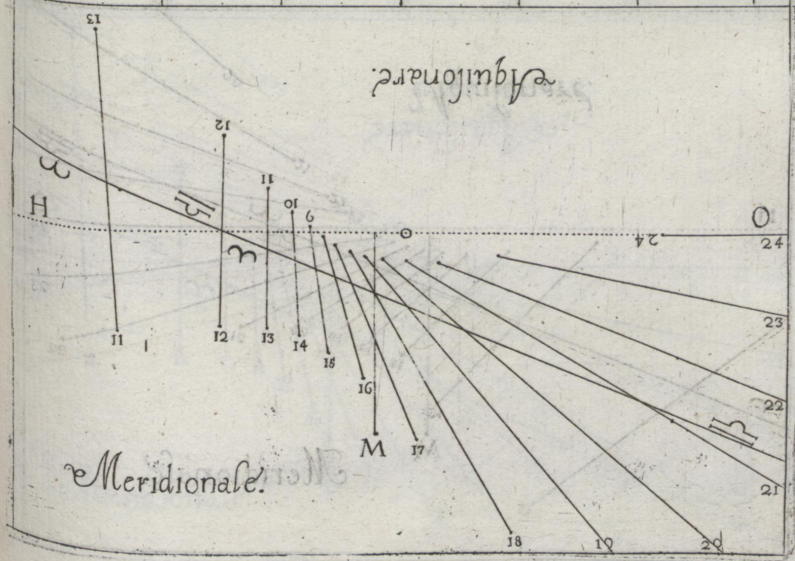
Tab. xxxviii.

H. Merid.	TP	Ar
25	260	
24	270	
23	278	
22	287	
21	297	
20	309	
19	328	
18	2	
17	48	
16	79	
15	96	
14	108	
13	118	
12	126	
11	135	
10		

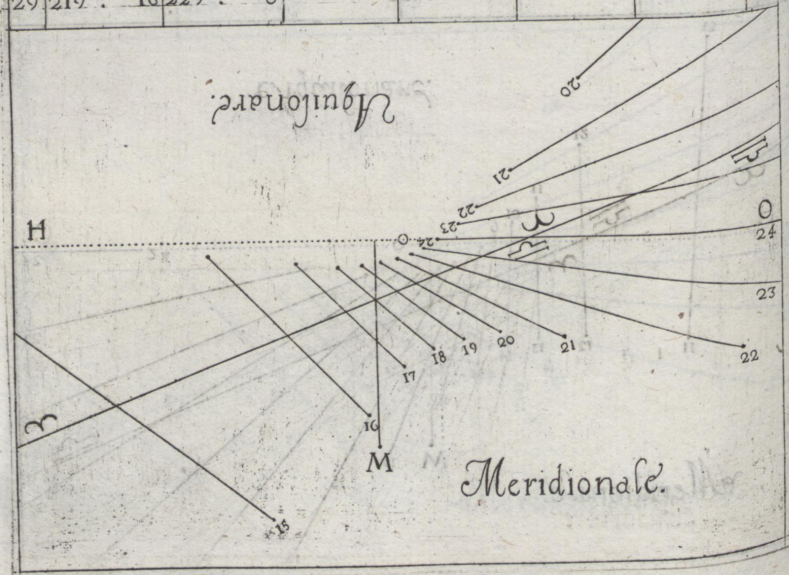
Tab. XXXXVIII

Declinatio ad Ort. Gra. 24. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Subs.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G . M P . MG . MP . M	G . M P . MG . MP . M	G . M P . MG . MP . M	G . M P . MG . MP . M	G . M P . MG . MP . M	G . M P . MG . MP . M	G . M P . MG . MP . M	
25	260 .	44 68 96 .	29				23
24	270 .	0 65 .	55				24
23	278 .	44 30 .	55				1
22	287 .	27 19 .	35				2
21	297 .	19 12 .	27	300 .	29 69 .	58	3
20	309 .	40 8 .	21	310 .	57 31 .	31	4
19	328 .	31 5 .	30	323 .	0 19 .	47	5
18	2 .	15 3 .	48	337 .	52 14 .	11	6
17	48 .	3 3 .	57	356 .	32 11 .	16	7
16	79 .	3 5 .	50	18 .	44 10 .	10	8
15	96 .	36 8 .	51	41 .	30 10 .	46	9
14	108 .	21 13 .	11	61 .	22 13 .	6	10
13	118 .	3 20 .	4	77 .	15 17 .	45	11
12	126 .	46 33 .	38	90 .	0 26 .	57	12
11	135 .	33 77 .	22	100 .	50 51 .	46	13
10				110 .	44 408 .	24	14



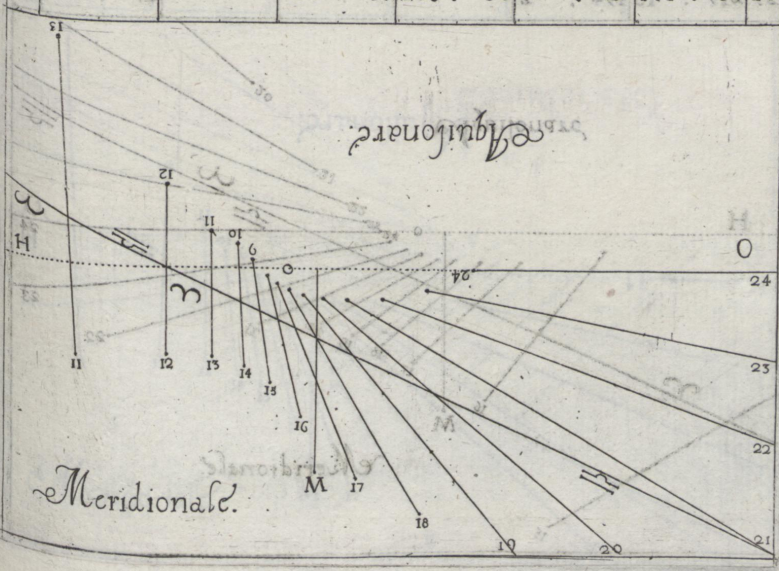
Declinatio ad Occas. Gra. 24. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis			Tropic. Cancr.			H. Aquil.	
	Arcus.		Umbra.	Arcus.		Umbra.	Arcus.		Umbra.		
	G.	M.	P.	G.	M.	P.	G.	M.	P.	M.	
14	103.	35	169	30							10
15	93.	57	118	50	59	31	68	58	24	39	66
16	85.	3	40	46	49	3	31	31	12	44	27
17	76.	22	23	0	37	0	19	47	389	15	27
18	67.	0	14	50	22	8	14	11	344	26	24
19	56.	10	7	57	3	28	11	16	328	49	24
20	40.	58	6	36	341	16	10	10	314	28	28
21	14.	53	4	22	318	30	10	46	301	11	39
22	331	24	3	38	298	38	13	6	280	31	74
23	202	36	4	54	282	45	17	45			
24	270	0	7	24	270	0	26	57			
25	256	17	11	5	259	10	51	46			
26	246	2	16	36	240	16	408	24			
27	236	88	26	21							
28	228	19	50	7							
29	219	16	229	0							



Tab. LI.	
H. Merid.	Ar.
G.	
24	270
23	278
22	287
21	296
20	308
19	326
18	359
17	45
16	79
15	96
14	108
13	118
12	127
11	135
10	140

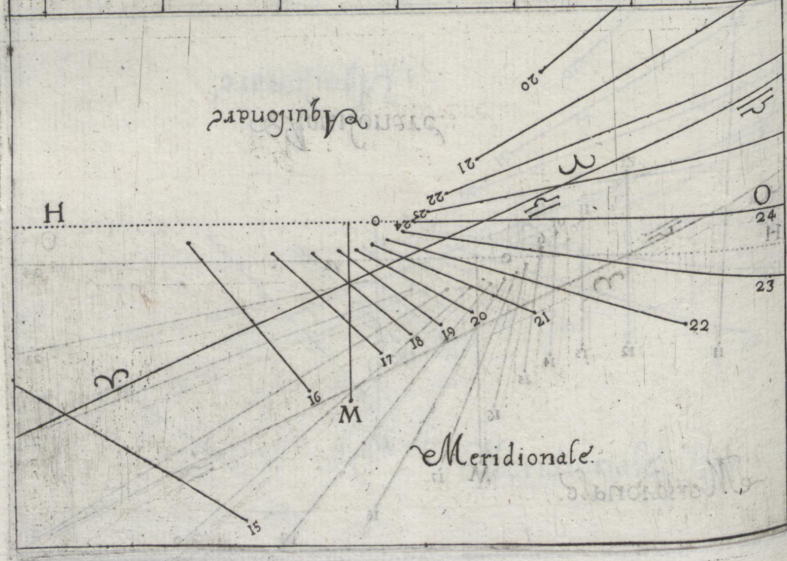
Tab. LI. Declinatio ad Ort. Gra. 25. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.	M.
24	270	37	56				24
23	278	40	38	77	08	08	1
22	287	20	19	33	04	04	2
21	296	50	12	30	300	24	3
20	308	51	8	34	310	42	4
19	326	46	5	37	322	34	5
18	359	8	3	45	337	02	6
17	45	50	3	47	355	28	7
16	79	40	5	36	17	35	8
15	96	46	8	36	40	39	9
14	108	43	12	44	60	53	10
13	118	23	19	24	77	5	11
12	127	0	32	16	90	0	12
11	135	40	71	38	100	52	13
10				110	40	260	14



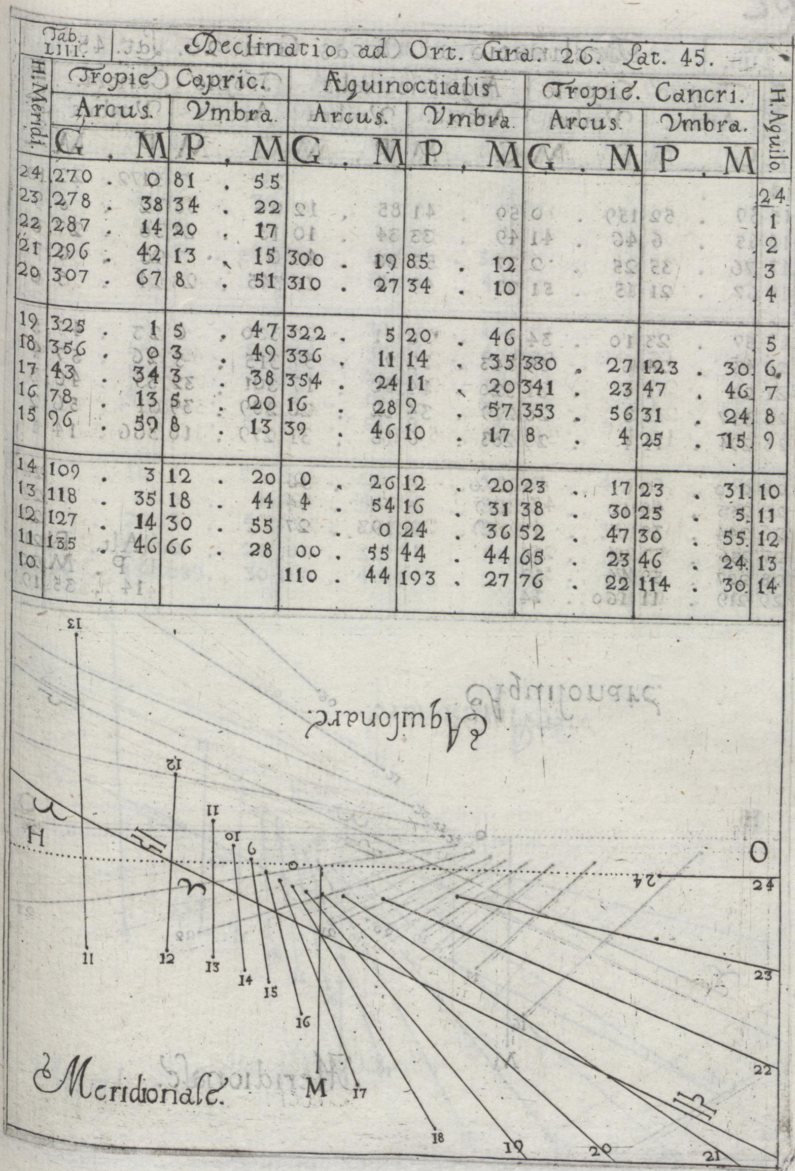
Tab. LII. Declinatio ad Occas. Gra. 25. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.
14							35	3 1887.	15 10
15	93	56 150	18 59	36 77	4 24	49 69			3 9
16	85	4 41	40 49	18 32	49 13	4 37			56 8
17	76	28 24	0 37	26 20	17 359	40 27			59 7
18	67	20 18	18 22	58 14	23 344	54 24			20 6
19	56	35 10	18 4	32 11	17 329	34 24			19 5
20	42	16 6	48 342	28 10	3 314	47 27			53 4
21	17	26 4	26 319	21 10	31 301	20 27			46 3
22	334	28 3	32 299	7 12	42 289	34 68			20 2
23	293	10 4	38 282	58 17	6 279	16	Inlinita.		1
24	270	0 7	7 270	0 23	42				24
25	256	4 10	43 259	8 47	36				23
26	246	4 16	4 249	20 260	36				22
27	236	43 28	22						21
28	228	6 47	36						20
29	219	13 194	2						19

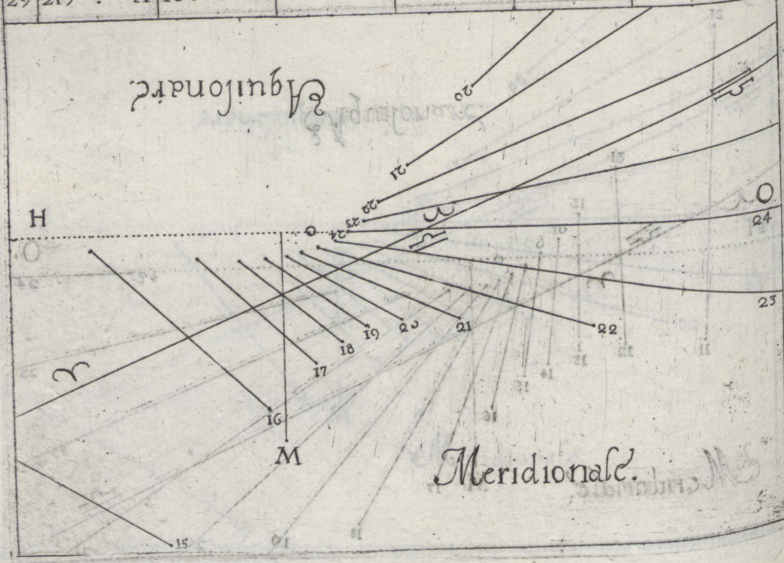


Tab. LIII.

H. Merid.	Ar.
24	270
23	278
22	287
21	296
20	307
19	325
18	356
17	43
16	78
15	96
14	109
13	118
12	127
11	135
10	143
9	151
8	159
7	167
6	175
5	183
4	191
3	199
2	207
1	215



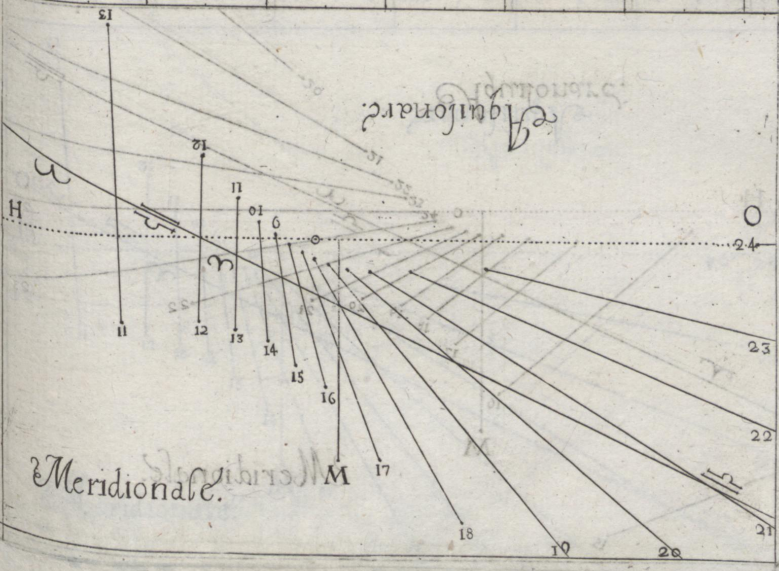
Tab. LIII.		Declinatio ad Occas. Grd. 26. Lat. 45.												H. Merid.
H. Merid.	Tropic Capric.				Aequinoctialis.				Tropic Canceri.					
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.					
14									35	17	51	72	22	10
15	39	52	159	0	59	41	85	12	24	58	72	86	9	
16	65	6	46	41	49	33	34	10	13	23	38	27	8	
17	76	35	25	2	37	55	20	46	01	17	28	0	7	
18	67	21	15	51	23	49	14	38	345	23	24	5	6	
19	57	23	10	34	34	36	11	20	330	0	23	47	5	
20	43	24	6	59	343	32	91	57	315	5	26	57	4	
21	20	1	4	31	320	14	10	17	301	32	35	46	3	
22	337	33	3	26	299	34	12	20	289	39	61	56	2	
23	294	14	4	23	283	6	16	31	279	10	366	14	1	
24	270	0	6	50	270	0	24	36	26	01	2	24		
25	255	48	10	21	259	5	44	44	44	01	35	23		
26	244	39	15	33	249	16	193	27	22	02	31	22		
27	236	33	24	24	24	14	14	14	14	00	35	20		
28	227	59	44	57	22	201	44	011						
29	219	11	160	14										
												Alt.	Alt.	
												P.	M.	
												14	35	



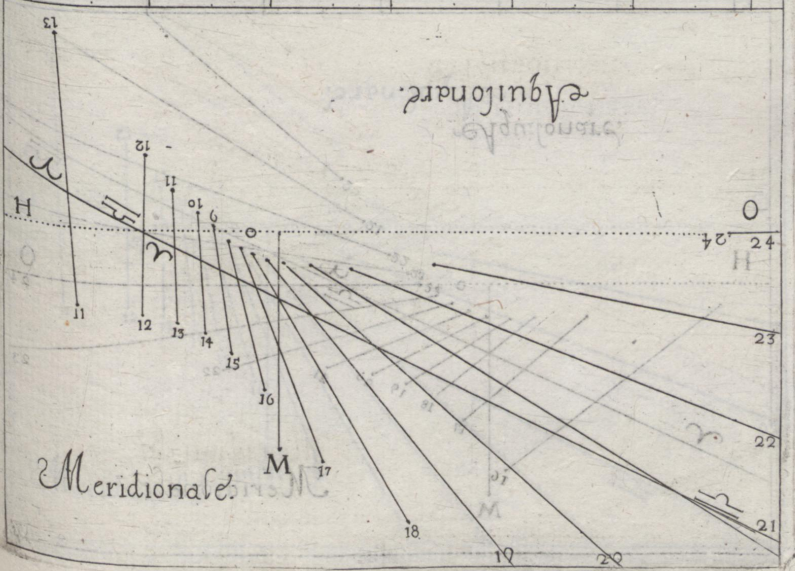
Tab. LV.			
24	270		
23	278		
22	237		
21	296		
20	307		
19	323		
18	357		
17	40		
16	77		
15	97		
14	109		
13	119		
12	127		
11	135		
10	144		

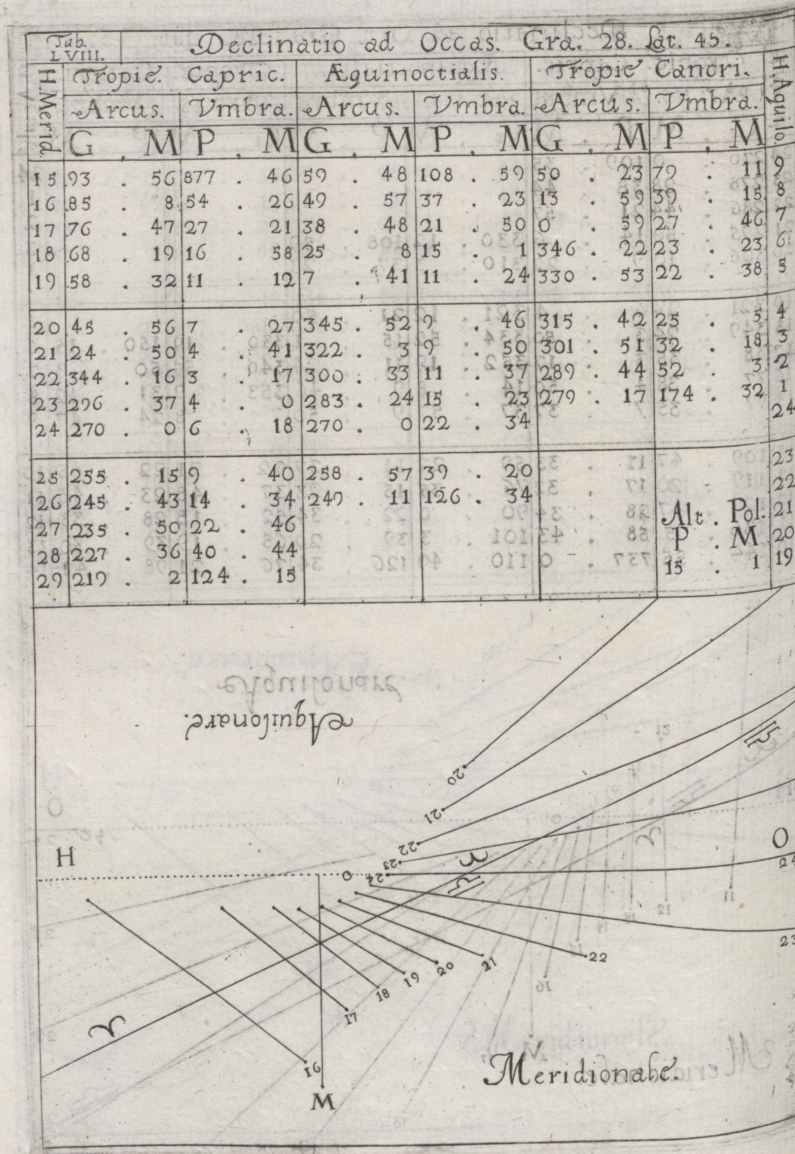
Tab. IV. Declinatio ad Ort. Gra. 27. Lat. 45.

H. Martii	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Augusti
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G. M. P.	MG. M. P.	MG. M. P.	MG. M. P.	MG. M. P.	M	
24	270	0 95	9 38	8 54	27 01	26 17	24
23	278	34 36	30 44	29 24	28 24	27 40	1
22	237	81 21	7 51	10 72	29 21	28 34	2
21	226	5 13	41 300	16 95	33 22	32 38	3
20	307	11 22	6 310	15 35	45 22	44 38	4
19	323	23 5	56 321	39 21	18 11	17 27	5
18	357	54 3	51 335	35 14	47 330	46 48	6
17	40	58 3	28 353	22 11	22 341	21 48	7
16	77	44 5	5 15	17 9	52 353	51 48	8
15	97	6 7	55 38	51 10	3 7	2 25	9
14	109	18 11	55 59	56 11	37 22	36 38	10
13	119	0 18	8 76	44 15	36 38	35 44	11
12	127	28 29	42 90	0 23	33 52	33 58	12
11	135	56 62	26 100	58 41	51 63	50 69	13
10	144	13 1039	30 110	43 152	29 76	28 82	14



Tab. LVII.		Declinatio ad Ort. Gra. 28. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Cancr.				H. Aquilo	
	Arcus.		Vmbra	Arcus.		Vmbra	Arcus.		Vmbra				
	G.	M	P.	G.	M	P.	G.	M	P.	M			
24	270	0	109	35									24
23	278	28	38	44									1
22	286	44	21	57									2
21	295	50	14	6	330	12	108	59					3
20	306	10	9	22	310	3	37	23					4
19	321	24	6	4	321	12	21	50					5
18	349	24	3	50	334	52	15	1	330	19	150	15	6
17	38	35	3	17	352	19	11	24	340	55	50	3	7
16	77	38	4	50	14	8	9	46	353	9	31	42	8
15	97	35	7	37	37	57	9	50	7	8	24	47	9
14	109	47	11	33	59	27	11	37	22	21	22	45	10
13	119	20	17	32	76	35	15	23	37	48	23	45	11
12	127	47	28	34	90	0	22	34	52	18	28	33	12
11	136	5	58	43	101	3	39	20	65	19	39	30	13
10	144	55	737	0	110	49	126	34	76	21	98	41	14



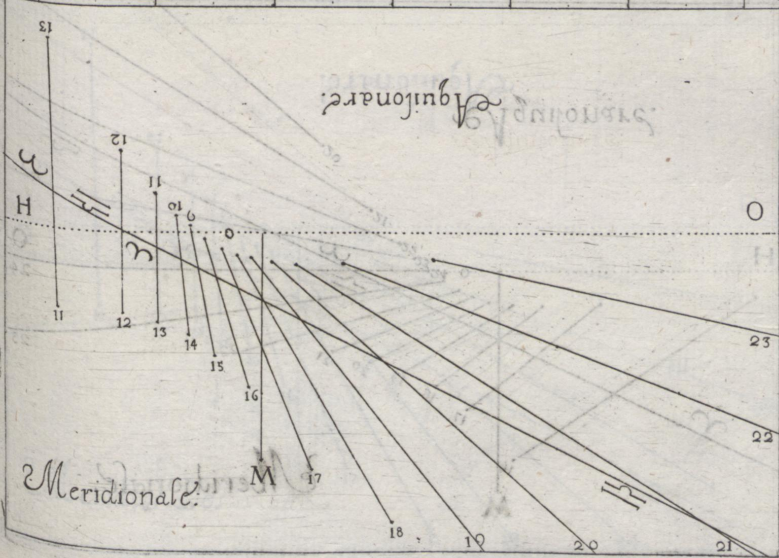


Tab. LVIII.

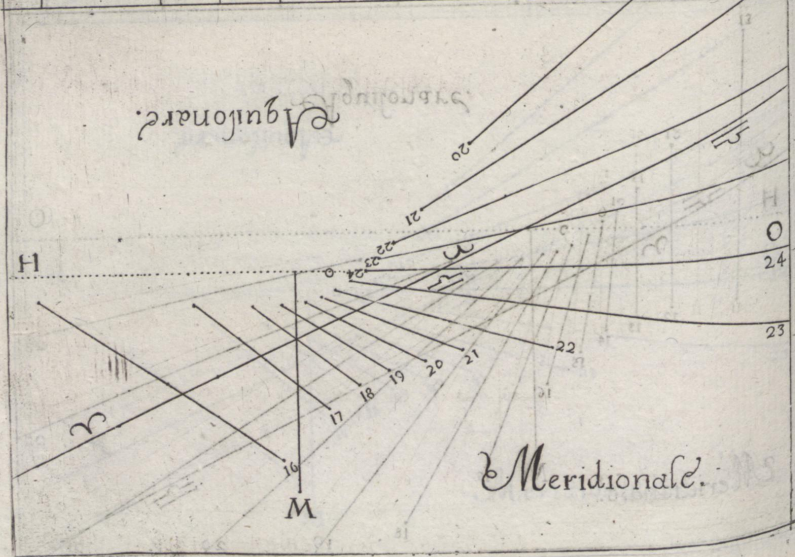
H. Merid.	Tropie. Capric.	Arcus.	Umbra.	Tropie. Canceri.	Arcus.	Umbra.
	G	M P	M G	M P	M G	M
24	270					
23	278					
22	286					
21	295					
20	305					
19	320					
18	346					
17	35					
16	76					
15	97					
14	110					
13	119					
12	127					
11	136					
10	144					

Diagram illustrating the declination of the sun at various latitudes. The diagram shows a horizontal line labeled 'H' (Horizon) and a vertical line labeled 'M' (Meridian). A series of lines representing the sun's path are drawn, labeled with numbers 15 through 29. The lines are labeled 'Equinoctialis' and 'Meridionale'. The diagram is a geometric representation of the astronomical data in the table above.

Tab. LVIII.		Declinatio ad Ort. Gra. 29. Lat. 45.												
H. Meridi.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo.	
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	M P	M G	M P	M G	M P	M G	M P	M G	M P	M G	M P		
24	270	0	133	23										24
23	278	28	41	17										1
22	286	26	22	51										2
21	295	30	14	35	300	10	126	57						3
20	305	38	9	39	309	49	39	10						4
19	320	14	6	16	320	47	22	27						24 5
18	346	46	3	56	334	8	15	15	330	15	172	24	6	7
17	35	16	3	11	351	16	11	28	340	42	51	26	7	6
16	76	37	4	37	12	54	9	41	352	48	31	58	8	8
15	97	30	7	20	36	55	9	37	6	40	24	50	9	9
14	110	4	11	10	58	52	11	18	21	50	22	24	10	10
13	119	46	16	59	76	23	14	51	37	21	23	2	11	11
12	127	59	27	28	90	0	21	38	52	1	27	29	12	12
11	136	14	55	8	101	25	37	0	65	2	38	40	13	13
10	144	56	382	53	110	49	107	33	76	17	77	24	14	14



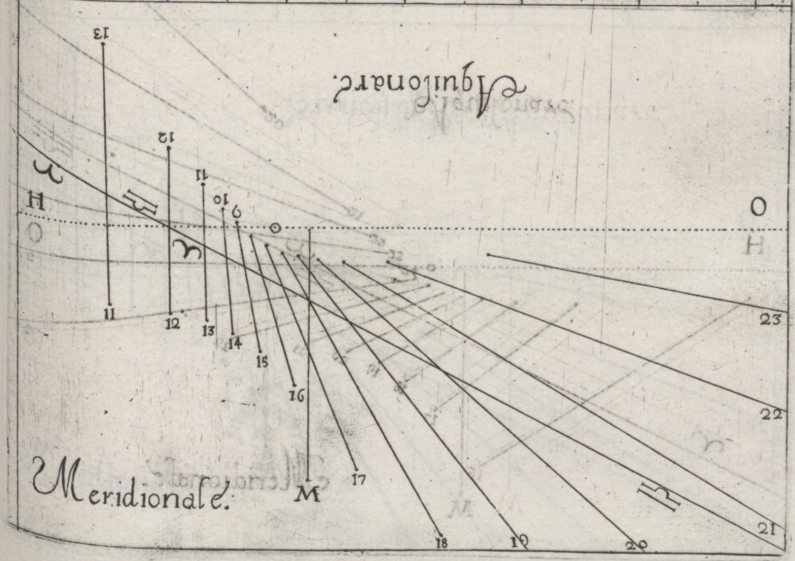
Tab. LX.		Declinatio ad Occas. Gra. 29. Lat. 45											
H. Merid.	Tropie Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	
15	93	56	278	37	59	50	126	57	25	22	83	50	9
16	85	10	59	59	50	11	39	10	14	15	40	15	8
17	76	54	28	42	39	13	22	27	1	23	28	3	7
18	68	33	17	45	25	52	15	15	346	51	23	21	6
19	59	17	11	33	8	44	11	28	331	22	22	21	5
20	47	0	7	35	347	6	9	41	316	3	24	30	4
21	27	6	41	48	323	3	9	37	202	6	31	29	3
22	347	57	34	04	301	18	15	16	289	51	49	5	2
23	298	19	3	47	283	37	14	51	279	18	147	41	1
24	270	0	6	1	270	0	21	38					24
25	254	49	9	20	258	35	37	80					23
26	244	48	14	6	249	11	107	33					22
27	235	33	21	59	87	59	87	33					21
28	227	22	38	53	0	53	0	101					20
29	218	36	11	59	22	59	22	110					19



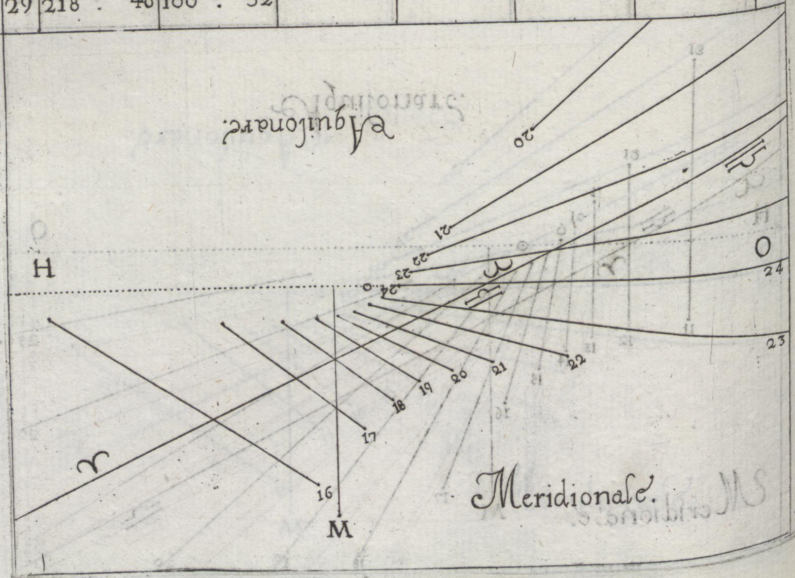
Tab. LXI.

H. Merid.	Arc.	G.
24	269	
23	278	
22	286	
21	295	
20	304	
19	318	
18	343	
17	32	
16	76	
15	97	
14	110	
13	122	
12	128	
11	136	
10	145	

Tab. LXI.		Declinatio ad Ort. Gra. 30. Lat. 45.											
H.Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Canceri.				H.Aquilo	
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M P	M G	M P	M G	M P	M G	M P	M G				
24	269	39	159	36									24
23	278	33	43	32									1
22	286	30	23	49									2
21	295	3	15	3	300	1	150	48					3
20	304	48	9	56	309	38	41	6					4
19	318	49	6	26	320	22	23	2					5
18	343	47	3	59	333	27	15	29	330	12	191	37	6
17	32	11	3	4	330	13	11	31	340	29	53	16	7
16	76	14		23	11	42	9	37	352	26	32	7	8
15	97	43	7	3	35	56	9	24	6	10	24	42	9
14	110	34	10	48	58	20	10	56	20	54	22	7	10
13	122	38	16	24	76	12	14	21	36	59	22	33	11
12	128	12	26	27	90	0	20	47	51	30	26	41	12
11	136	27	52	39	101	10	34	55	64	33	36	41	13
10	145	29	308	58	110	53	94	15	76	16	66	5	14

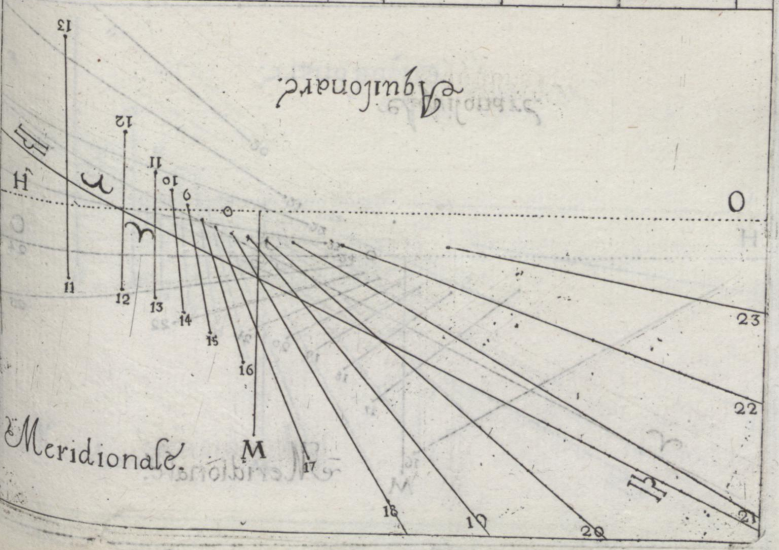


Tab. LXII.		Declinatio ad Occasu. Gra. 30. Lat. 45:												H. Merid.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Merid.	
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
15					59	59	150	48	23	31	88	10	9	
16	85	10	65	25	50	22	41	6	14	34	40	54	8	
17	76	59	30	10	39	38	23	2	1	50	28	57	7	
18	68	41	18	11	26	33	15	29	34	22	23	7	6	
19	59	44	11	53	9	45	11	31	331	51	21	58	5	
20	47	40	7	50	348	18	9	37	316	30	23	45	4	
21	29	18	4	55	324	4	9	24	302	19	29	47	3	
22	351	37	32	12	301	40	10	56	289	57	42	42	2	
23	299	35	32	35	283	48	14	21	279	26	126	36	1	
24	270	0	5	46	270	0	20	47					24	
25	254	31	9	2	258	50	34	55					23	
26	244	5	13	40	249	7	94	15					22	
27	235	17	21	15									21	
28	227	12	37	7									20	
29	218	48	100	52									19	

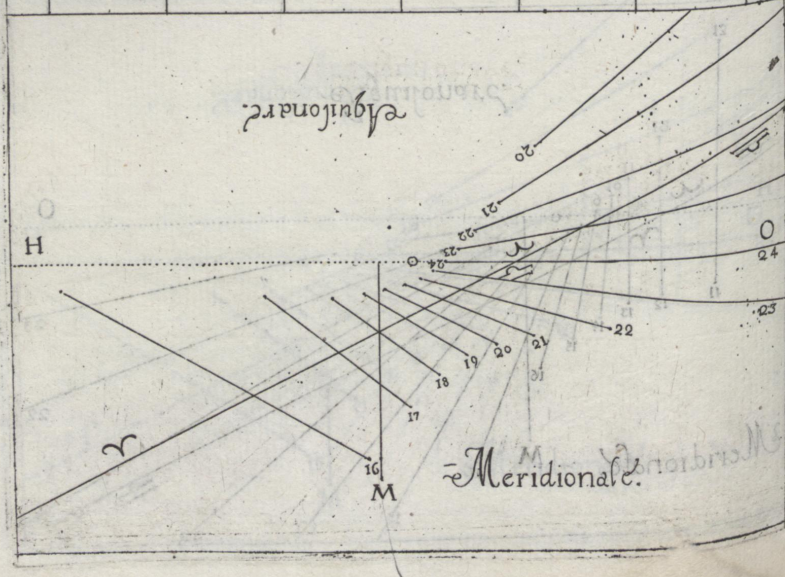


Tab. LXIII. Declinatio ad Ort. Gra. 31. Lat. 45.

H. Merid.	Tropie Capric.		Aequinoctialis.		Tropie Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G. M. P. M. G. M. P. M. G. M. P. M.							
24	270	0	226	27	881	0	24
23	278	23	47	18	882	0	23
22	286	9	24	49	883	0	22
21	294	41	15	33	300	89	21
20	304	9	10	13	309	28	20
19	317	24	6	37	319	59	19
18	340	58	4	3	332	46	18
17	28	41	2	57	349	10	17
16	75	21	4	9	10	28	16
15	98	3	6	46	34	52	15
14	110	54	10	27	57	44	14
13	120	10	15	56	75	59	13
12	128	33	25	32	90	0	12
11	136	33	49	25	101	14	11
10	144	59	212	53	110	54	10

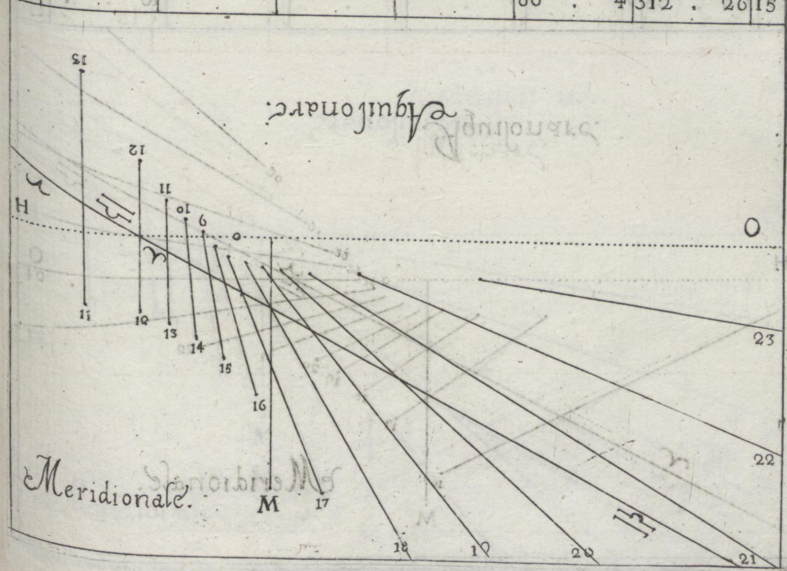


Tab. LXIII.		Declinatio ad Occas. Gra. 31. Lt. 45.												H. Aquil.	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.						
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.				
	G.	M P.	M	G.	M P.	M	G.	M P.	M						
15					59	13	188.		59	25		37	93	47.	2
16	85		11	73		6	50		32	43		22	14		8
17	77		5	31		46	40		1	23		43	2		7
18	69		0	18		52	27		14	15		45	347.	52	6
19	60		30	12		16	11		50	11		36	332.	20	5
20	49		3	8		3	349		32	9		33	316.	49	4
21	31		25	5		2	325		8	9		13	302.	31	3
22	385		20	3		10	302.		16	10		37	290.	2	2
23	301		24	3		25	284		1	13		52	279.	20	1
24	270		0	5		31	270		0	19		56			24
25	254		0	8		43	258		46	35		2			23
26	243		47	13		14	249		6	82		0			22
27	234		56	20		33									21
28	226		56	35		38									20
29	218		44	92		51									19
														Alt. Pol.	
														P. M.	
														15	45

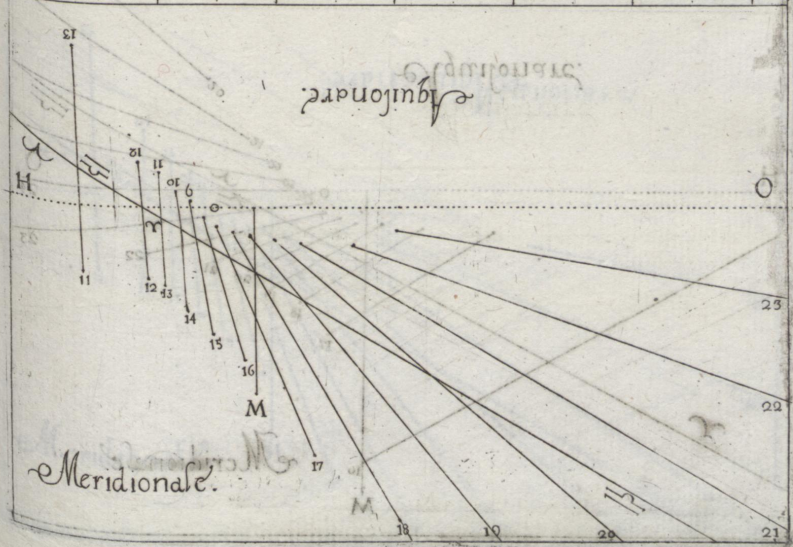


Tab. LXV. Declinatio ad Ort. Gra. 32. Lat. 45.

H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	M G.	M P.	M G.	M P.	M
24	270	0	294	31			24
23	278	21	50	46			1
22	286	17	25	53			2
21	294	24	16	4	300	2	3
20	303	35	10	32	309	17	4
					45	38	
19	315	57	6	47	319	35	5
18	338	12	4	8	332	6	6
17	25	8	2	51	348	13	7
16	74	37	3	56	9	14	8
15	98	19	6	30	33	48	9
					9	3	
14	111	17	10	7	57	7	10
13	120	55	15	27	75	46	11
12	128	51	24	40	90	0	12
11	136	43	46	51	101	18	13
10	145	2	207	5	110	59	14
9					74	30	15
						76	
						86	
						4	
						312	

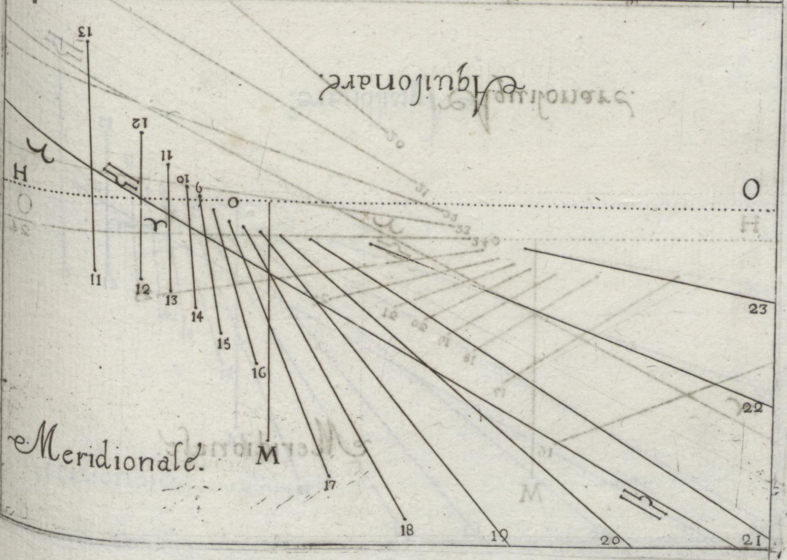


Tab. LXVII.		Declinatio ad Ort. Gra. 33. Lat. 45.									
cri.	H. Aquilo	H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo		
			Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
abra.	M	G	M P	M G	M P	M G	M P	M			
10. 9	24	270	0 589	2				24			
13. 8	23	278	19 25	17				1			
8. 7	22	286	8 27	6				2			
42. 6	21	294	1 16	37	300	11 355	34	3			
5. 5	20	302	51 10	50	309	8 48	22	4			
25. 4	19	314	54 6	59	319	14 25	6	5			
25. 3	18	335	38 4	12	331	26 16	18 330	3 340	55 6		
10. 2	17	21	8 2	46	347	14 11	47 339	52 57	29 7		
47. 1	16	73	40 3	43	7	58 90	27 351	19 32	53 8		
24	15	98	32 6	13	32	39 8	52 4	42 24	23 9		
23	14	111	40 9	48	56	28 10	0 19	47 21	7 10		
22	13	121	3 14	58	75	33 12	57 35	36 20	57 11		
Pol	12	129	9 23	50	90	0 18	28 50	50 23	51 12		
M	11	136	55 44	46	101	22 29	51 64	26 31	35 13		
20	10	145	5 180	39	111	2 67	15 76	7 53	11 14		
1	9						86	17 237	56 15		

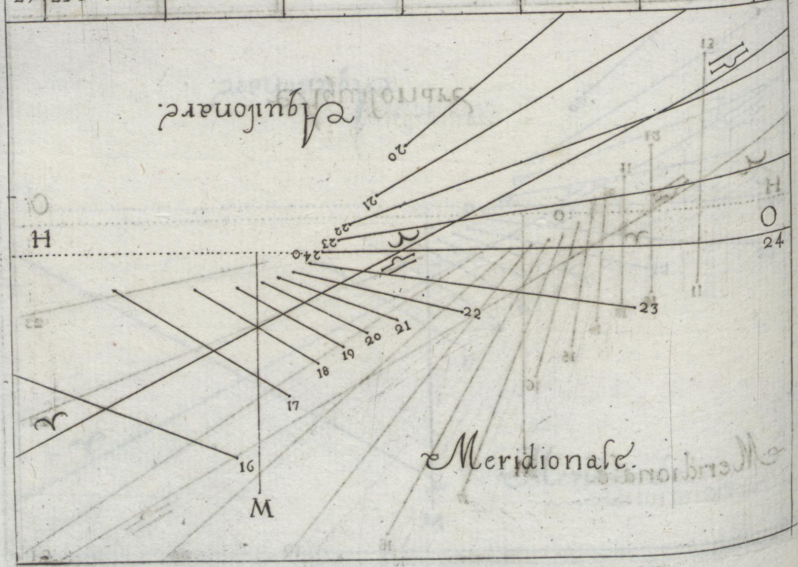


45.	H. Aquil.
cri.	bra.
M	
20 9	
58 8	
15 7	
21 6	
42 5	
48 4	
23 3	
2 2	
45 1	
24	
23	
22	
Pol 21	
M 20	
18 19	

Tab. LXVIII. Declinatio ad Ort. Gra. 34. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M P.	M G.	M P.	G.	M P.	M G.	M P.	G.	M P.	M G.	M P.
24	270	0	468	47	300	4	63	48	24	0	468
23	278	17	60	9	308	58	51	14	23	17	60
22	286	34	74	18	316	75	65	23	26	34	74
21	293	51	88	27	324	90	75	32	34	51	88
20	302	68	101	36	332	105	83	41	42	68	101
19	313	85	114	45	340	120	69	50	51	85	114
18	322	102	127	54	348	135	50	59	60	102	127
17	332	119	140	63	356	150	35	68	69	119	140
16	342	136	153	72	364	165	19	77	78	136	153
15	352	153	166	81	372	180	3	86	87	153	166
14	362	170	179	90	380	195	13	95	96	170	179
13	372	187	192	99	388	210	27	104	105	187	192
12	382	204	205	108	396	225	41	113	114	204	205
11	392	221	218	117	404	240	55	122	123	221	218
10	402	238	231	126	412	255	69	131	132	238	231
9	412	255	244	135	420	270	83	140	141	255	244

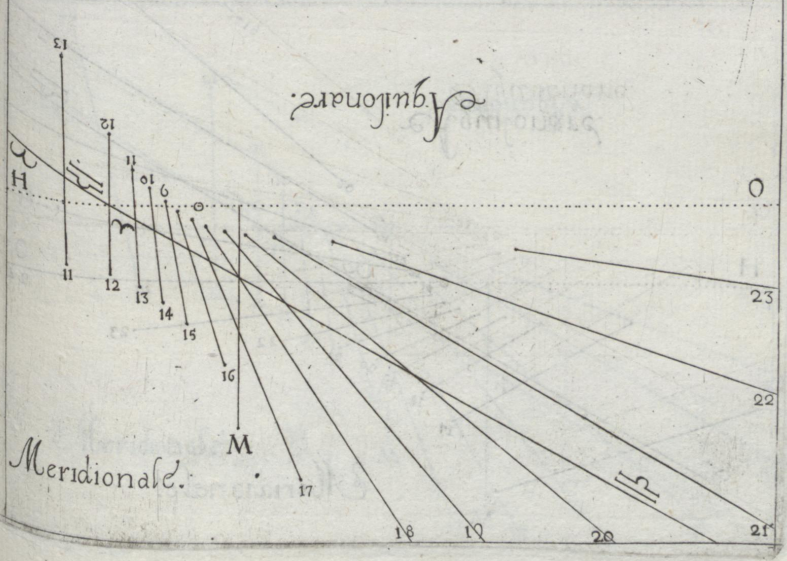


Tab. LXX.		Declinatio ad Occas. Gra. 34. Lat. 45.										H. Merid.		
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancri.				H. Merid.			
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.				Vmbra.	
	G.	MP	MG	M	P	MG	M	P	M	G			MP	M
15	.	.	.	59	56	63	48	25	57	113	52	9		
16	85	14	106	26	51	2	51	14	15	39	43	8		
17	77	19	37	20	41	8	25	49	3	27	28	7		
18	69	45	21	5	29	13	16	35	349	26	22	6		
19	61	27	13	26	13	46	11	52	333	31	20	5		
20	51	52	8	45	353	17	9	324	318	0	21	41		
21	37	87	25	0	28	328	20	8	41	303	14	25		
22	6	39	3	0	11	304	12	9	42	290	21	35		
23	308	32	0	51	284	41	12	31	279	23	69	43		
24	270	0	4	46	270	0	17	47	22	0	0	24		
25	252	46	7	49	258	32	28	27	12	41	04	23		
26	242	20	12	3	248	53	61	40	12	38	02	22		
27	233	31	18	43	0	85	85	101	12	101	12	21		
28	226	18	31	34	0	121	121	111	12	111	12	20		
29	218	23	73	25	0	121	121	111	12	111	12	19		

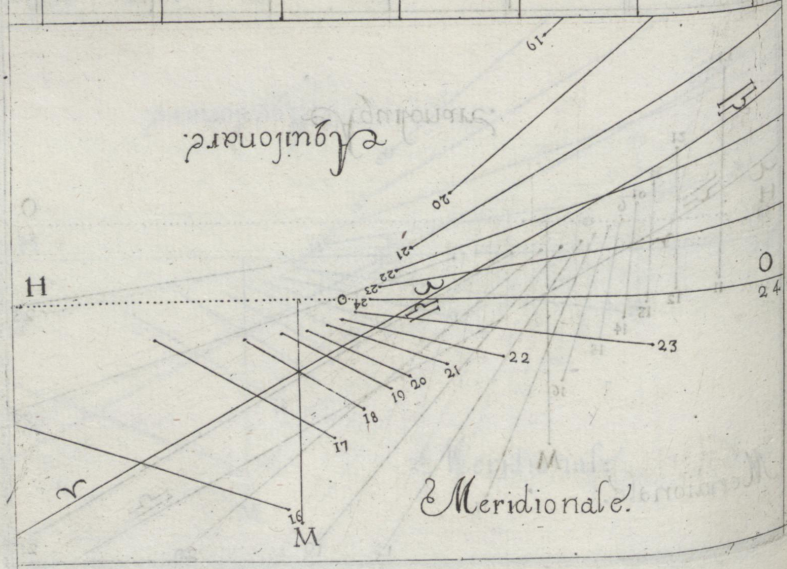


ri.	H
ra.	Aquil
M	
52 9	
43 8	
19 7	
20 6	
20 5	
12 4	
22 3	
50 2	
43 1	
80 24	
23	
22	
21	
20	
19	

Declinatio ad Ort. Gra. 35. Lat. 45.											
Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.					
Arcus.			Arcus.			Arcus.					
Vmbra.			Vmbra.			Vmbra.					
G.	M	P.	G.	M	P.	G.	M	P.	G.	M	P.
23	278	15 66	23								
22	285	36 29	46								
21	293	26 17	48	300	15 374	34					
20	302	52 11	31	308	49 54	34					
19	312	36 7	25	318	42 26	38					
18	330	40 4	27	330	10 16	53	330	1 634	49	6	
17	12	36 2	38	345	15 11	58	339	30 61	11	7	
16	71	38 3	17	5	27 9	22	350	37 33	28	8	
15	99	9 5	44	30	19 8	32	3	43 24	14	9	
14	112	38 9	10	55	5 9	26	18	42 20	34	10	
13	121	52 14	6	75	3 12	9	34	40 20	1	11	
12	129	49 22	19	90	0 17	8	50	12 22	20	12	
11	137	20 40	49	101	32 27	10	64	6 28	50	13	
10	145	14 136	16	111	11 56	37	76	0 45	52	14	
9						86		3 131	29	15	



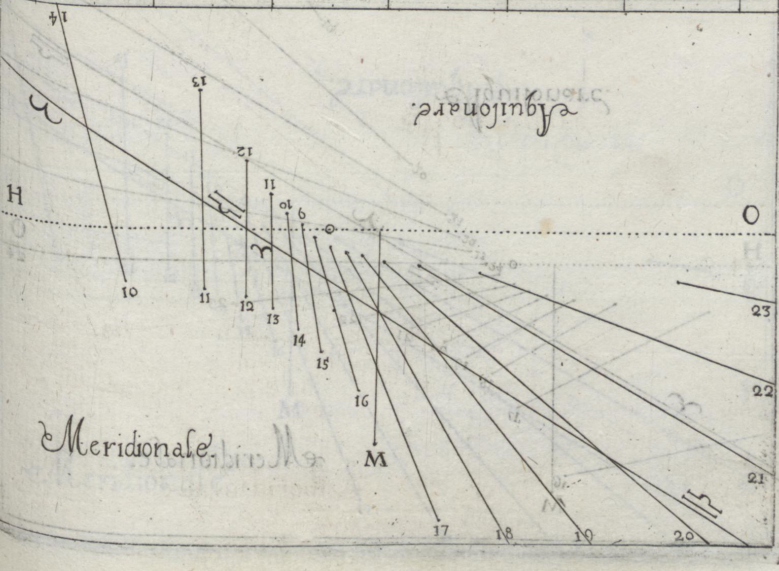
Tab. LXXII.		Declinatio ad Occas. Gra. 35. Lat. 45.										H. Merid.
		Tropic. Caprio.		Aguinoctialis.		Tropic. Cancr.						
		Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.					
		G.	M P.	M G.	M P.	M G.	M P.	M			H. Aquilo.	
15				59	45	3174	3426	3122	45	9		
16	85	14	119	32	51	11	54	3415	54	44	35	
17	78	23	39	47	41	18	26	383	56	28	25	
18	69	52	21	54	29	50	16	53549	58	22	15	
19	62	9	13	52	14	45	11	58334	25	19	59	
20	52	33	9	1	354	33	9	22318	27	20	30	
21	38	45	5	37	329	41	8	32303	32	24	28	
22	10	26	3	13	304	55	9	26290	29	34	5	
23	310	49	2	40	284	57	12	9279	25	63	42	
24	270	0	4	32	270	0	17	8270	0	8275	47	
25	252	22	7	31	258	28	27	10				
26	241	46	11	42	248	49	56	37				
27	233	31	18	7								
28	225	58	30	24								
29	218	18	68	58								
										Alt. Pol.		
										P. M.		
										16		53

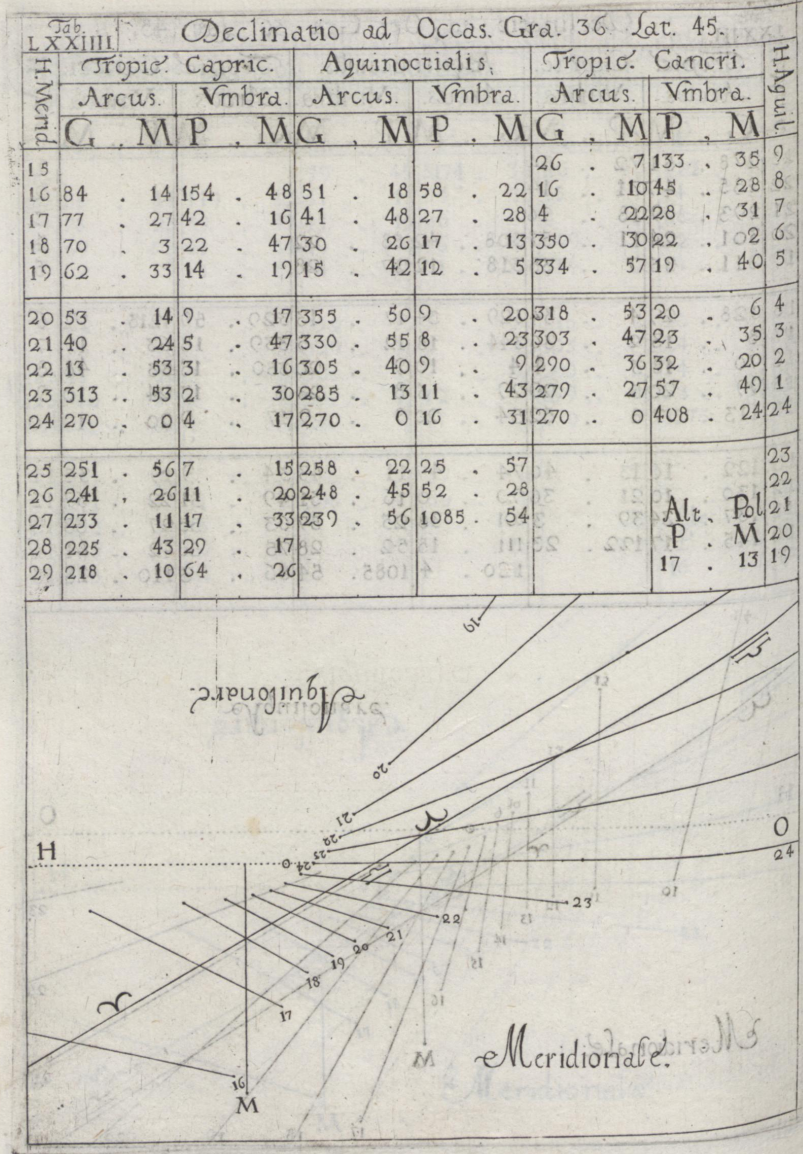


45.	H. Aquil.
cri.	
ibra.	
M	
45 9	
35 8	
25 7	
15 6	
5 5	
30 4	
28 3	
5 2	
42 1	
47 24	
23	
22	
Pol	
M	
53	

Tab. LXXIII. Declinatio ad Ort. Gra. 36. Lat. 45.

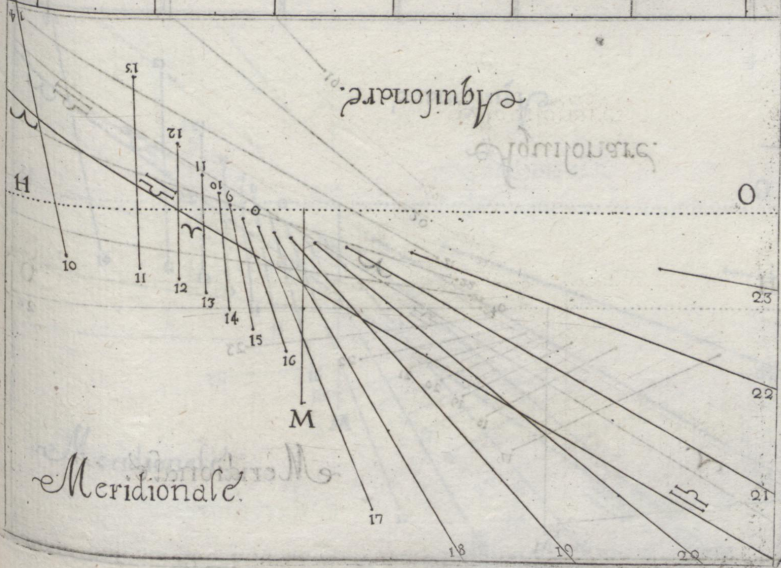
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G. M P	MG	M P	MG	M P	MG	M P	M
23	278	51 72	54				1
22	285	49 31	14	82 81	18 84	43 11	2
21	293	49 18	26	82 84	14 01	54 12	3
20	301	24 11	51 308	42 58	22		4
19	311	35 7	38 318	12 27	28		5
18	328	29 4	34 329	34 17	13 329	59 12 13	6
17	8	13 2	36 344	18 12	5 339	18 63	7
16	70	18 3	4 4	10 9	20 350	15 33	8
15	99	20 5	29 29	15 8	23 3	13 24	9
14	113	80 7 8	52 54	20 9	9 17	9 20	10
13	122	16 13	40 74	47 11	43 34	9 19	11
12	130	10 21	36 90	0 16	51 49	51 22	12
11	137	34 39	3 101	38 25	57 63	55 27	13
10	145	17 122	23 111	15 52	28 75	56 42	14
9			120	4 1085	54 86	3 110	15





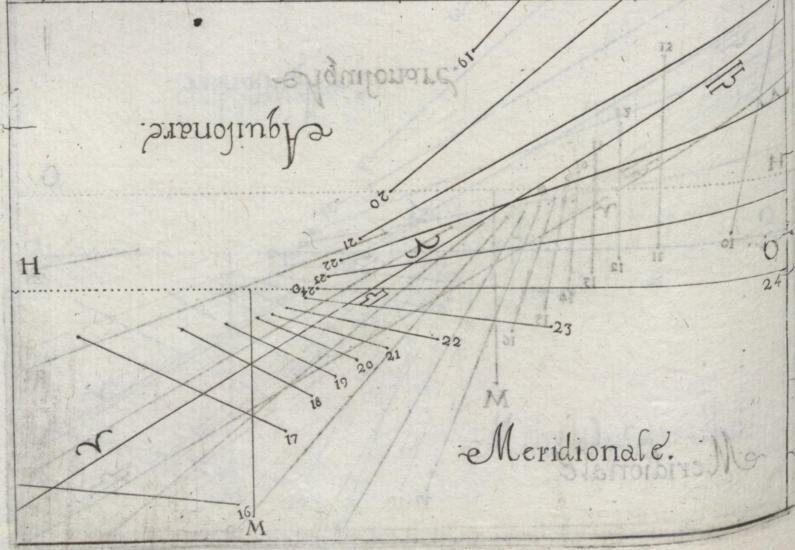
Tab. LXXV. Declinatio ad Ort. Gra. 37. Lat. 45.

H Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H Aquil.
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G.	M.	P.	G.	M.	P.	G.	M.	P.	
23	278	13	82	51						1
22	285	41	32	57	84	40	12	22	01	2
21	292	57	19	6	88	5	24	02	02	3
20	300	54	12	13	308	30	62	43	03	4
19	310	28	7	50	317	57	28	23	04	5
18	326	8	4	41	328	58	17	33	330	6
17	34	28	2	34	343	21	12	12	339	7
16	69	1	2	51	2	52	9	19	349	8
15	99	53	5	13	27	48	8	13	28	9
14	113	48	8	36	53	42	8	53	17	10
13	122	56	13	16	74	31	11	19	33	11
12	130	30	20	57	90	0	15	57	49	12
11	137	48	37	30	101	42	24	49	63	13
10	145	23	111	42	111	23	48	44	75	14
9				120	17	453	21	86	3	15



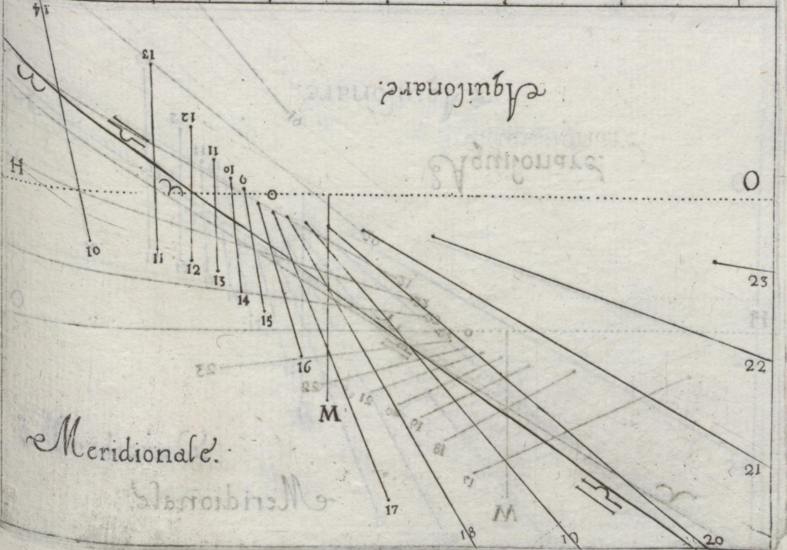
Tab. LXXVI. Declinatio ad Occas. Cae. 37. Lat. 45.

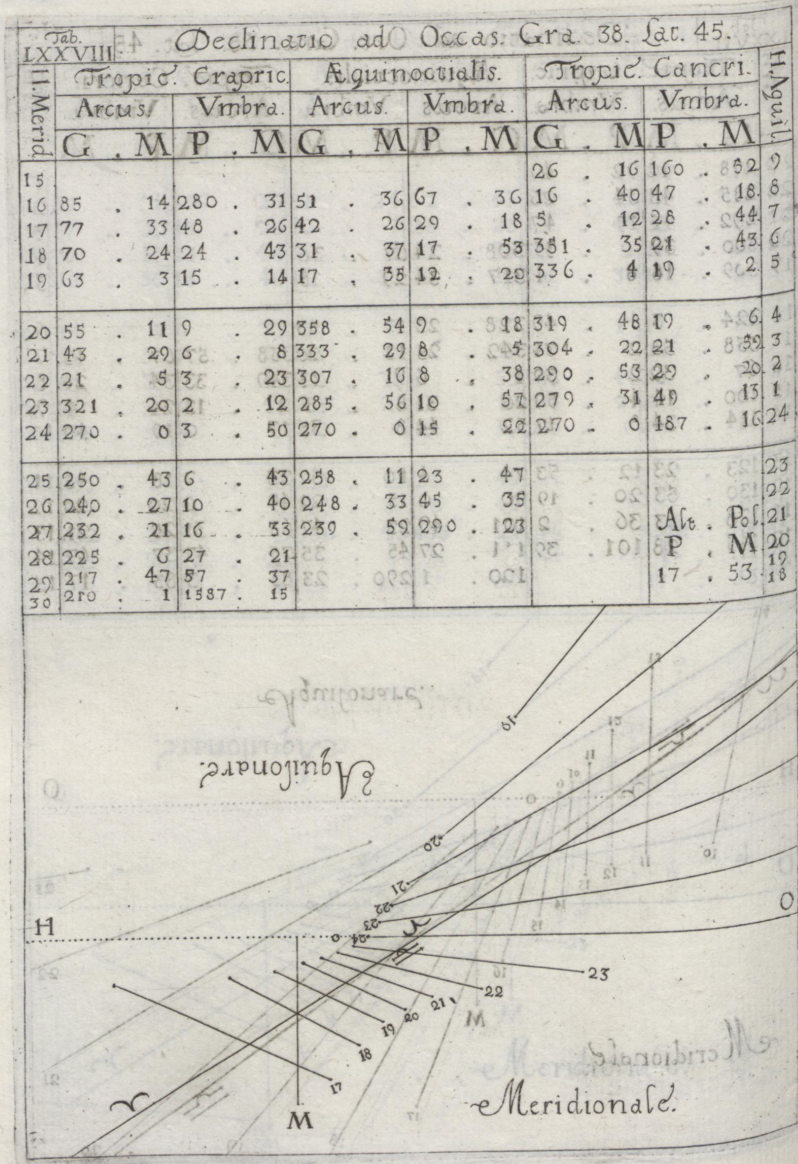
H Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H Aequil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	M	G.	M P.	M	
15							26
16	85	14	216	28	51	24	62
17	77	30	45	20	42	7	28
18	70	13	23	44	31	2	17
19	62	56	14	46	16	39	12
							12
20	54	7	9	33	357	8	9
21	41	58	5	56	332	12	8
22	17	33	3	19	306	18	8
23	3	17	2	21	285	29	11
24	270	0	4	3	270	0	15
							57
25	251	17	6	59	258	18	24
26	240	21	11	0	248	37	48
27	232	39	17	3	236	43	453
28	225	23	28	20	224	64	22
29	217	59	61	4	15	224	17



Tab. LXXVII. Declinatio ad Ort. Gra. 38. Lat. 45.

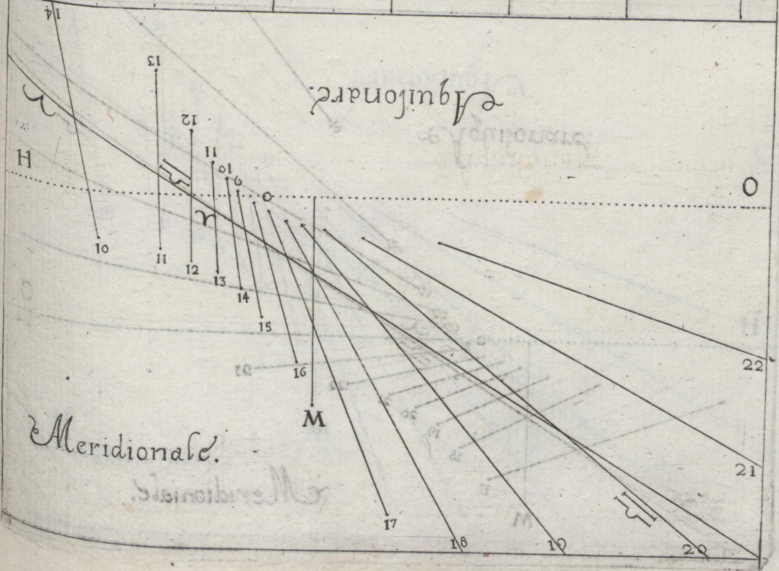
Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
M	G.	M.P.	M.G.	M.P.	M.G.	M.P.	M
23	278	12 92	49				1
22	285	45 34	26				2
21	292	44 19	47				3
20	300	39	35 308	24 67	36		4
19	309	18 8	4 317	34 29	18		5
18	324	3 4	49 328	23 17	53		6
17	358	55 2	34 342	25 12	20 338	57 67	43 7
16	67	32 2	30 1	6 7	18 349	33 34	26 8
15	100	14 4	59 26	31 8	25 21	13 24	4 9
14	114	34 8	17 52	44 8	38 17	0 19	49 10
13	123	23 12	53 74	4 10	57 33	7 18	45 11
12	130	53 20	19 90	0 15	22 49	6 20	20 12
11	138	3 36	2 101	49 23	47 63	31 25	21 13
10	145	28 101	39 111	27 45	35 75	47 37	47 14
9			120	1 290	23 83	3 83	17 15



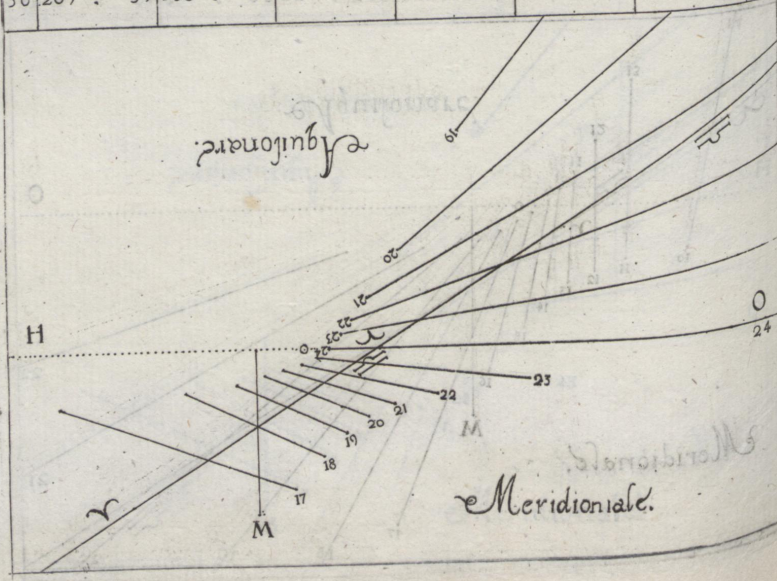


Declinatio ad Ort. Gra. 39. Lat. 45.

Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.	
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.
G. M P	M G	M P	M G	M P	M
23 278	11 109	48			
22 285	29 36	46			
21 292	29 20	32			
20 299	58 12	38 308	22 73	25	
19 308	35 8	18 317	16 30	19	
18 322	4 4	58 327	49 15	15	
17 354	10 2	35 343	31 12	28 338	48 70
16 65	29 2	27 0	18 9	18 349	13 34
15 100	46 4	44 25	10 7	57 1	44 24
14 114	52 8	0 51	52 8	23 16	25 19
13 123	59 12	31 73	55 10	35 32	34 18
12 131	17 19	43 90	0 14	50 48	41 19
11 138	20 34	42 101	56 22	48 63	17 24
10 145	34 94	2 111	34 42	44 75	42 35
9		120	6 212	26 86	1 75
					2 15

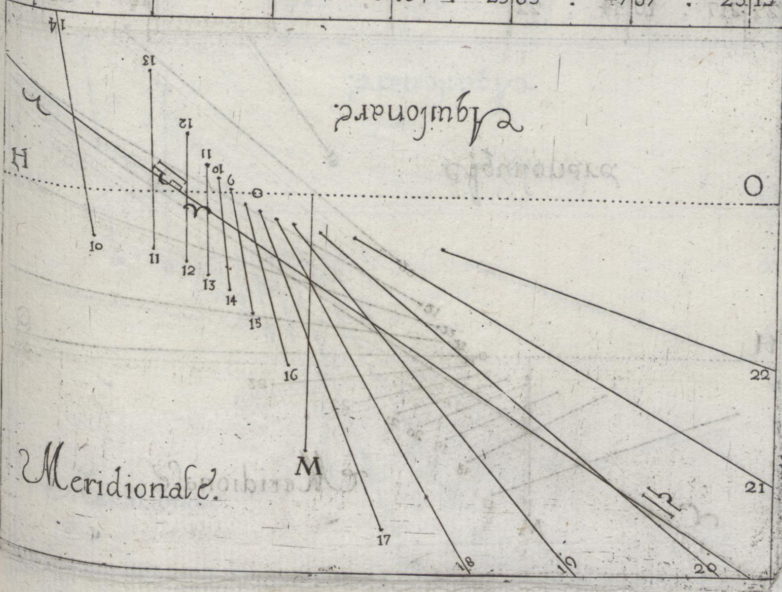


Tab. LXXX.		Declinatio ad Occas. Gra. 39. Lat. 45.										M. Merid.							
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.														
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.								
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.									
15	.	.	.	.	.	.	26	20	182	.	26	9							
16	85	.	16	876	.	23	51	.	38	73	.	25	17	.	1	48	.	23	8
17	77	.	37	52	.	31	42	.	44	30	.	19	5	.	36	28	.	53	7
18	70	.	32	25	.	48	32	.	11	18	.	15	352	.	8	21	.	37	6
19	63	.	26	15	.	44	18	.	29	12	.	28	336	.	40	18	.	44	5
20	55	.	26	10	.	7	359	.	42	9	.	18	320	.	18	18	.	38	4
21	44	.	54	6	.	18	354	.	50	7	.	57	304	.	42	21	.	16	3
22	24	.	8	3	.	28	308	.	8	8	.	23	291	.	2	28	.	5	2
23	326	.	46	2	.	5	286	.	5	10	.	35	279	.	35	45	.	58	1
24	270	.	0	2	.	35	270	.	0	14	.	10	270	.	0	135	.	21	24
25	250	.	3	6	.	28	258	.	4	22	.	49		.			.		23
26	239	.	19	10	.	30	248	.	26	42	.	44		.			.		22
27	231	.	48	16	.	7	239	.	54	212	.	26		.			.		21
28	224	.	45	26	.	30		.			.			.			.		20
29	217	.	39	54	.	50		.			.			.			.		19
30	209	.	59	955	.	69		.			.			.			.		18
																			16

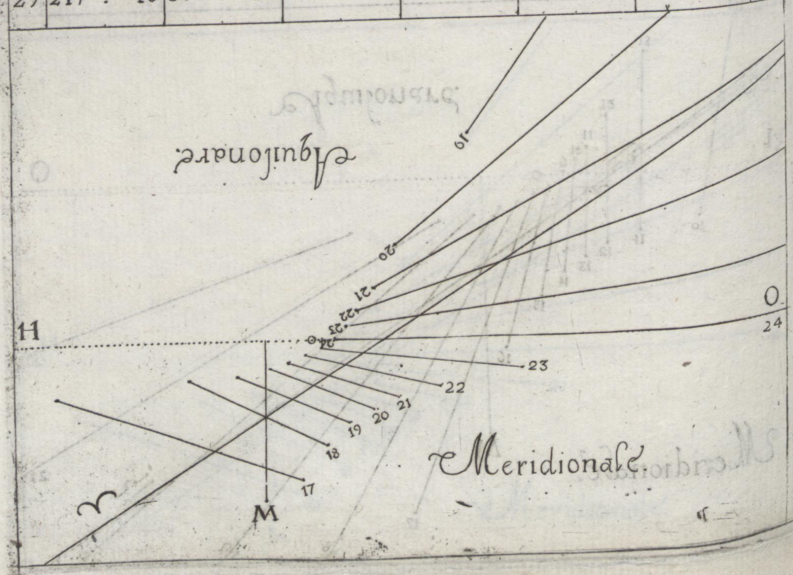


Tab. LXXXI. Declinatio ad Ort. Gra. 40. Lat 45.

H. Merid.	Tropic Capric.		Aequinoctialis.		Tropic Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	M G.	M P.	M G.	M P.	M
23	277	53 128	34				1
22	285	26 38	52				2
21	292	14 21	21				3
20	299	18 13	51 308	16 80	2		4
19	306	34 8	33 316	59 31	26		5
18	320	14 5	8 327	15 18	38		6
17	349	34 2	37 340	36 12	37 338	39 73	7
16	63	16 2	15 359	0 9	18 348	53 35	8
15	101	15 4	30 23	46 7	50 1	14 24	9
14	115	38 7	44 50	55 8	9 15	50 19	10
13	124	50 12	10 73	36 10	14 32	2 18	11
12	131	42 19	8 90	0 14	18 48	29 19	12
11	138	32 34	50 102	3 21	54 63	5 23	13
10	145	40 86	50 111	40 40	25 75	37 33	14
9			120	5 167	25 85	47 67	15

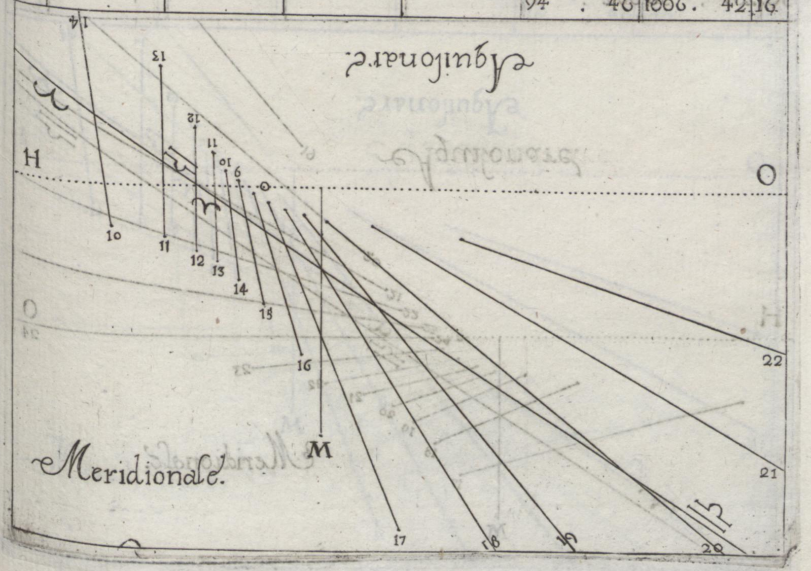


Tab. LXXXII.		Declinatio ad Occas. Gra. 40. Lat. 45.										H. Aquil.	
H. Merid.	Tropic Capric.			Aequinoctialis.			Tropic Cancr.						
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M P.	M G.	M P.	M G.	M P.	M						
15								26	24	206	3	9	
16				54	38	80	2	17	9	49	32	8	
17	76	52	54	7	43	1	31	26	6	7	28	50	7
18	70	56	26	51	32	45	18	36	352	42	21	31	6
19	63	33	16	14	19	24	12	37	337	16	18	28	5
20	56	21	10	25	1	0	9	18	320	49	18	11	4
21	46	3	6	30	336	14	7	50	305	2	20	32	3
22	27	9	3	30	309	5	8	9	291	7	26	46	2
23	330	51	1	58	286	24	10	14	279	38	42	43	1
24	270	0	3	22	270	0	14	18	270	0	120	56	24
25	249	31	6	13	257	57	21	54					23
26	239	21	10	2	248	26	40	25					22
27	231	0	15	40	239	55	167	25					21
28	224	23	25	42									20
29	217	10	54	22									19
										Act. Pol.			
										P. M.			
										18		36	19

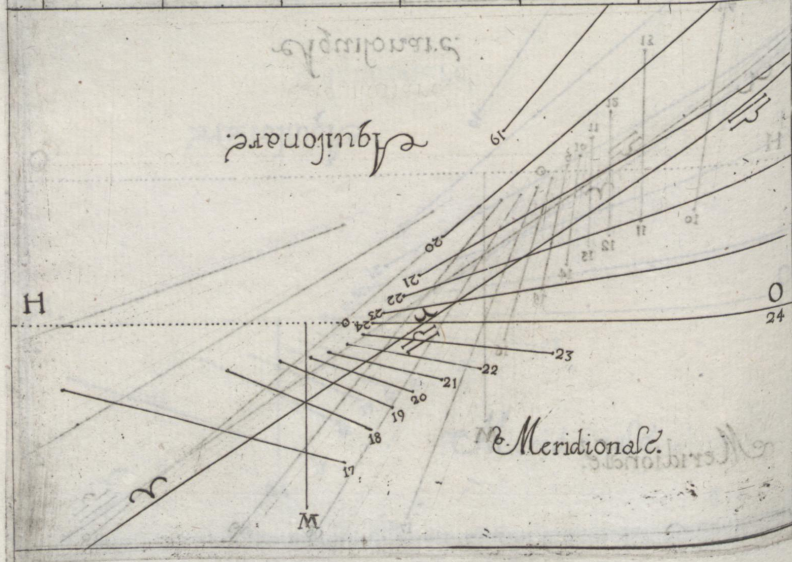


cri.	H. Aquil.
bra.	M
3	9
32	8
50	7
31	6
28	5
11	4
32	3
46	2
43	1
56	24
23	
22	
Pol.	21
M	20
36	19

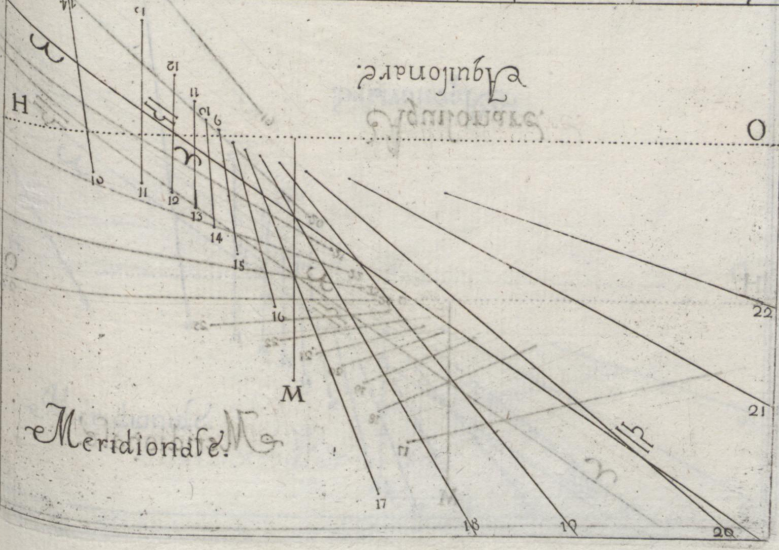
Declinatio ad Ort. Gra. 41. Lat. 45.											
Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.					
Arcus.			Arcus.			Arcus.					
Vmbra.			Vmbra.			Vmbra.					
G.	M	P.	G.	M	P.	G.	M	P.	G.	M	P.
23	278	9	163	54							
22	285	19	41	26							
21	28	3	22	9							
20	299	4	13	47	308	12	87	36			
19	306	46	8	48	316	44	32	26			
18	318	23	5	17	326	44	18	58			
17	345	8	2	39	334	42	12	45	338	30	76
16	60	36	2	3	357	43	9	19	348	33	38
15	101	48	4	16	22	20	7	43	07	44	23
14	116	25	7	28	50	0	7	55	15	13	19
13	124	58	11	49	73	14	2	83	31	27	17
12	132	8	18	37	90	0	13	49	47	51	18
11	138	54	32	16	102	10	21	9	62	50	22
10	145	48	81	13	111	46	38	13	75	31	31
9	82	81			120	9	140	57	86	0	61
8								94	46	1006	42



Tab. LXXXIII. Declinatio ad Occas. Gra. 41. Lat. 45.											
H. Merid.	Tropic. Capric.			Æquinoctialis.			Tropic. Cancr.			H. Aquil.	
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.		
	G.	M.	P.	G.	M.	P.	G.	M.	P.	M.	
15							26		26	240	22
16				51	48	87	36	17	22	56	37
17	77	42	62	16	43	16	32	26	6	26	29
18	78	49	28	12	33	16	18	58	353	14	21
19	64	9	16	48	18	18	12	43	337	52	18
20	56	44	10	44	2	17	9	19	321	26	17
21	47	28	6	42	337	40	7	43	365	22	19
22	30	8	3	41	310	0	7	53	291	22	25
23	336	48	1	53	286	46	9	53	279	40	40
24	270	0	3	8	270	0	13	49	270	0	104
25	248	39	3	58	257	50	21	9			
26	238	21	9	45	248	14	38	53			
27	230	54	15	13	239	51	140	57			
28	224	4	24	52		82	34	11			
29	217	18	49	44		0		0			
30	209	56	382	1							



Tab. LXXXV.		Declinatio ad Ort. Gra. 42. Lat. 45.											
H. Merid.	Tropic. Capric.				Equinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
23	278	8	201	1									1
22	285	16	44	4									2
21	291	53	23	9									3
20	298	26	14	14	308	4	98	41					4
19	306	14	9	5	316	28	33	49					5
18	316	59	5	28	326	13	19	26					6
17	340	57	2	43	338	50	12	55	338	15	80	37	7
16	57	40	1	53	356	27	9	19	348	13	35	58	8
15	102	25	4	3	20	54	7	36	0	13	23	59	9
14	116	48	7	13	49	1	7	41	14	37	19	0	10
13	125	23	11	29	72	55	9	33	30	52	17	19	11
12	132	33	18	6	90	0	13	20	47	26	18	6	12
11	139	6	31	8	102	18	20	13	62	35	21	44	13
10	145	55	73	46	111	52	35	58	75	25	30	28	14
9					120	11	117	28	85	58	55	46	15
8								94	46	448	26	16	

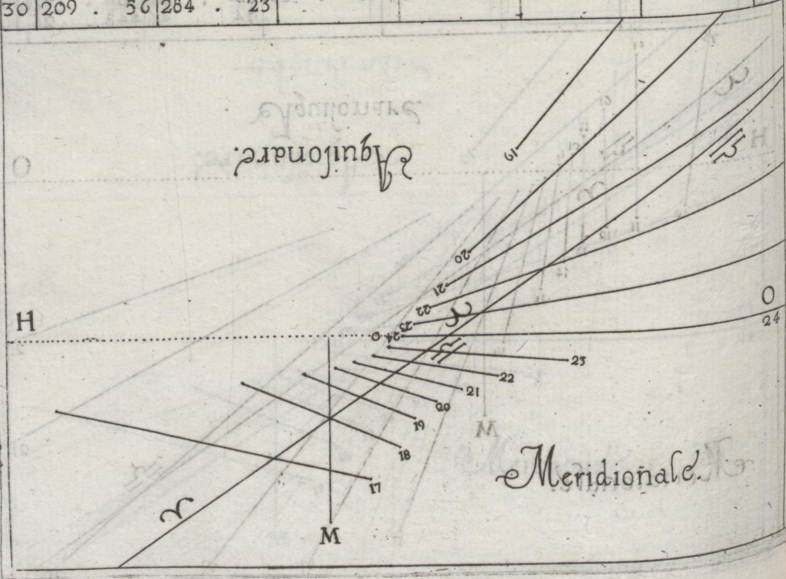


Tab. XXXVI		Declinatio ad Occas. Gra. 42. Lat. 45.										H. Aquilo.	
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancri.						
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.		
15								26	29	276	45	9	
16				51	56	78	41	17	35	51	50	8	
17	77	46	68	24	34	32	33	49	6	50	29	21	
18	70	59	29	30	33	47	19	26	353	47	21	17	
19	64	34	17	28	21	10	12	55	338	28	17	56	
20	57	19	11	3	3	33	9	19	321	51	17	21	
21	48	34	6	54	339	6	7	36	305	43	19	17	
22	32	43	3	40	310	59	7	41	291	31	24	38	
23	342	34	1	48	287	5	9	33	279	43	37	43	
24	270	0	2	55	270	0	13	20	270	0	89	24	
25	248	6	5	44	257	42	20	13				23	
26	238	24	9	27	248	8	35	58				22	
27	229	55	14	49	239	49	117	28				21	
28	223	47	24	5								20	
29	217	8	47	25								19	
30	209	56	284	23								18	

Aequinoctiale

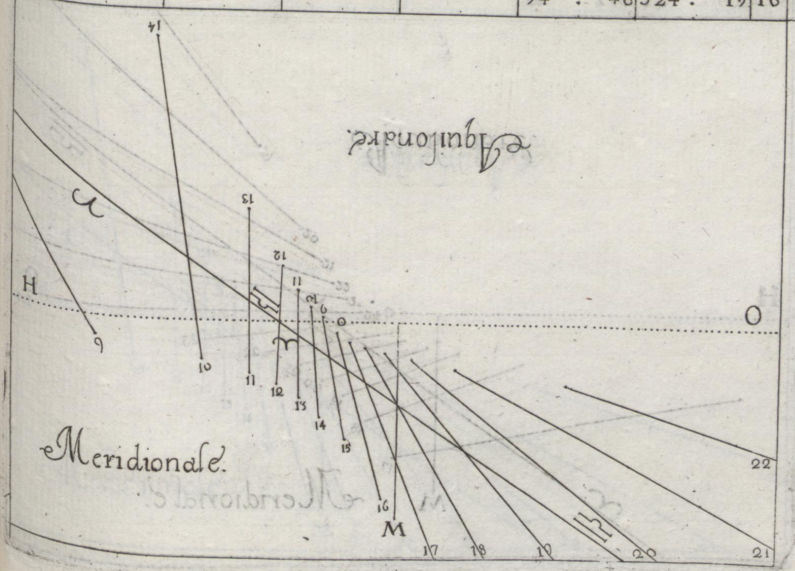
Meridionale

M



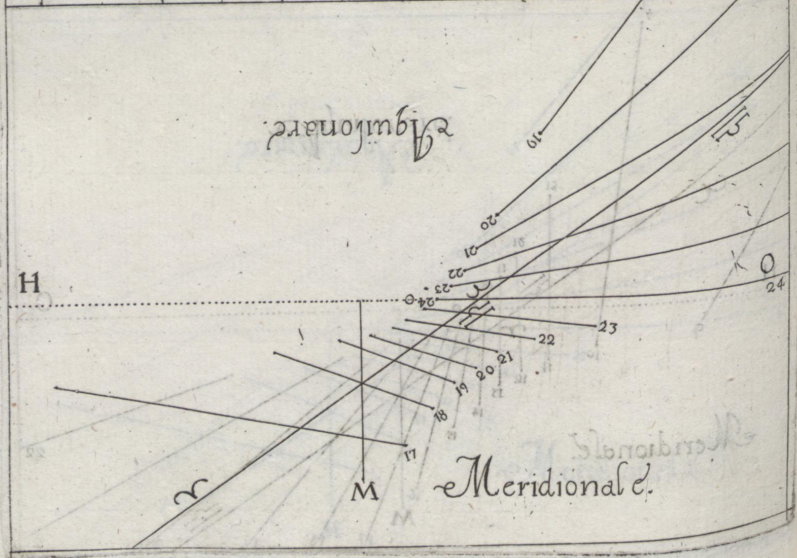
56 195

Tab. LXXXVII		Declinatio ad Ort. Gra. 43. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
23	278	8	340	25									1
22	285	12	47	21									2
21	291	40	23	58									3
20	298	8	14	40	308	3	112	47					4
19	305	10	9	20	316	14	35	13					5
18	315	7	5	38	325	43	19	53					6
17	336	46	2	45	337	58	13	24	338	13	83	22	7
16	53	33	1	41	355	10	9	21	347	53	36	26	8
15	103	11	3	49	19	24	7	30	359	44	23	39	9
14	118	10	6	58	47	57	7	28	14	0	18	30	10
13	126	5	11	10	72	31	9	14	30	15	16	59	11
12	133	1	17	37	90	0	12	53	46	57	17	40	12
11	139	25	30	8	102	25	19	26	62	19	20	59	13
10	146	5	71	30	112	0	34	2	75	18	29	23	14
9					120	15	101	39	85	58	51	32	15
8									94	46	324	19	16



Tab. LXXXVIII Declinatio ad Occas. Gra. 43. Lat. 45.

H. Merid.	Tropic. Caprie.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.
15					26	30 335	26 9
16			51	57 112	47 17	48 53	6 8
17	77	47 76	18	43	46 35	12 7	15 29
18	71	6 31	0	34	17 19	53 354	20 21
19	64	46 17	59	22	2 13	4 339	6 17
20	57	39 11	23	4	50 9	21 322	25 16
21	49	43 7	7	340	36 7	30 306	6 18
22	35	27 3	56	312	3 7	28 291	43 23
23	349	28 1	45	287	29 9	14 279	46 35
24	270	0 2	41	270	0 12	53 270	0 79
25	247	6 5	30	257	35 19	26	
26	236	34 9	9	248	0 34	2	
27	229	53 14	23	239	45 101	339	
28	223	21 23	24				
29	216	54 45	29				
30	209	52 242	42				

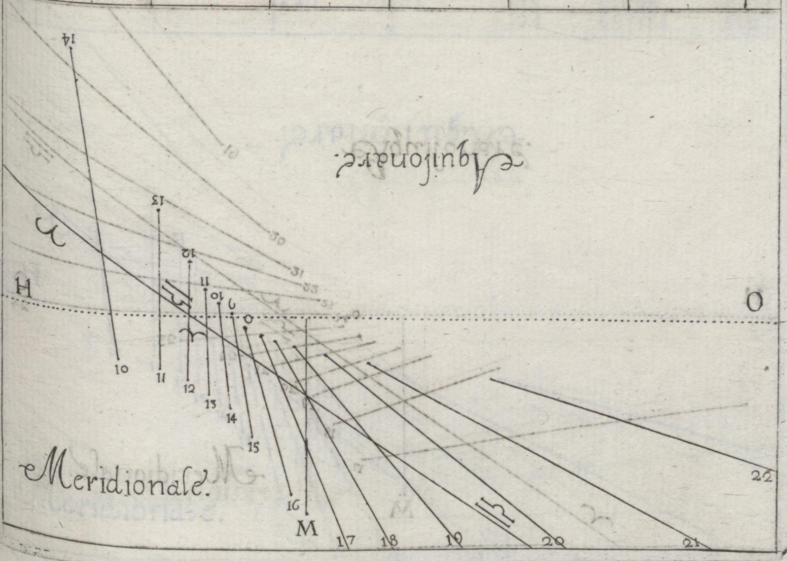


45.

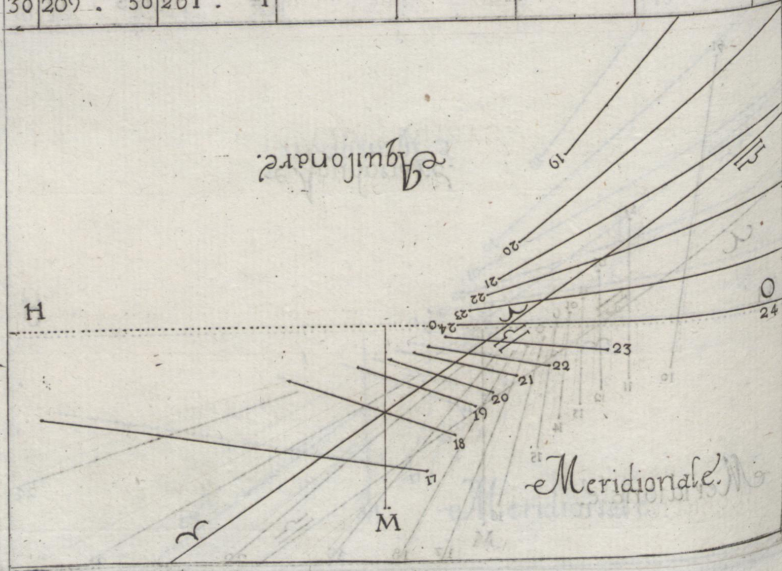
incri.	H. Aquil.
mbra.	M
26 9	
6 8	
32 7	
12 6	
42 5	
58 4	
41 3	
51 2	
41 1	
48 0	
23	
22	
21	
20	
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	
9	
8	

Tab. LXXXIX. Declinatio ad Ort. Gra. 44. Lat. 45.

Tropic. Capric.		Equinoctials.		Tropic. Cancr.	
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.
G.	MP	MG	MP	MG	MP
M					
23 278	8 485	17			
22 285	8 50	46			
21 291	30 24	57			
20 297	47 15	8 307	56 128	19	
19 304	57 9	34 315	58 36	36	
18 313	13 5	48 225	12 20	18	
17 332	57 2	54 337	6 13	15 338	4 87
16 49	13 1	32 353	53 9	23 347	34 36
15 104	10 3	35 17	53 7	24 359	13 23
14 118	34 6	43 47	5 7	5 13	23 18
13 126	36 10	51 72	9 8	55 29	38 16
12 133	32 17	8 70	0 12	26 46	36 17
11 139	29	8 102	33 18	44 62	4 20
10 145	67	22 112	9 32	25 75	13 27
9 151	65	120	18 90	33 85	57 47
8				94	45 195



Declinatio ad Occas. Gra. 44. Lat. 45.												H. Aquilo	
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.						
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	MP.		G.	MP.		G.	MP.					
13							26	32	429	38	9		
16				52	4	128	9	18	154	21	8		
17	77	48	84	40	44	236	36	7	39	29	42	7	
18	71	14	32	33	34	48	20	18	354	56	21	6	
19	64	59	18	36	22	54	13	15	339	44	17	27	5
20	58	32	11	44	6	7	9	23	322	58	16	35	4
21	50	38	7	20	34	2	7	24	306	28	18	6	3
22	37	54	4	4	31	2	55	7	291	54	22	43	2
23	35	6	1	43	28	7	51	8	279	49	33	38	1
24	270	0	2	29	270	0	12	26	270	0	70	27	24
25	246	10	5	16	257	27	18	44	12	01			23
26	236	11	8	53	247	51	32	25	3	01			22
27	229	14	14	1	239	42	90	33	8	01			21
28	222	59	22	44									20
29	216	41	43	37									19
30	209	50	201	1									18

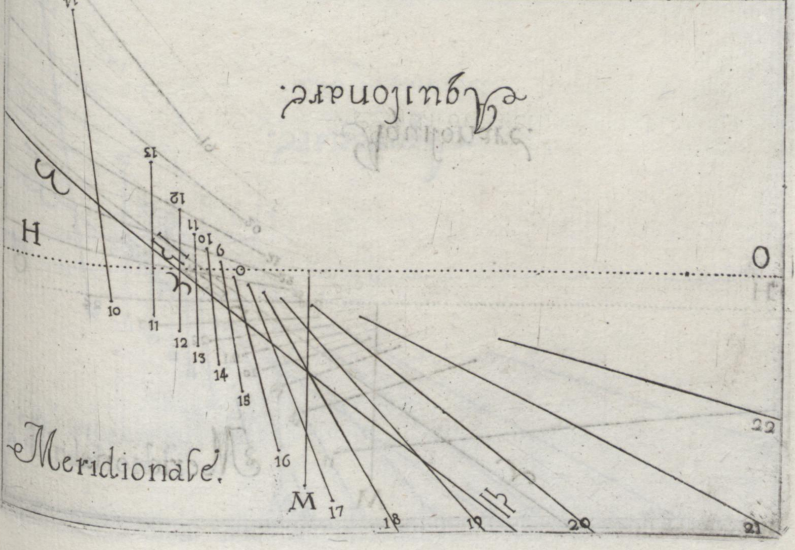


45.

ncr.	H. Agula
38	9
21	8
42	7
6	6
27	5
35	4
6	3
43	2
38	1
27	24
23	
22	
21	
20	
19	
18	

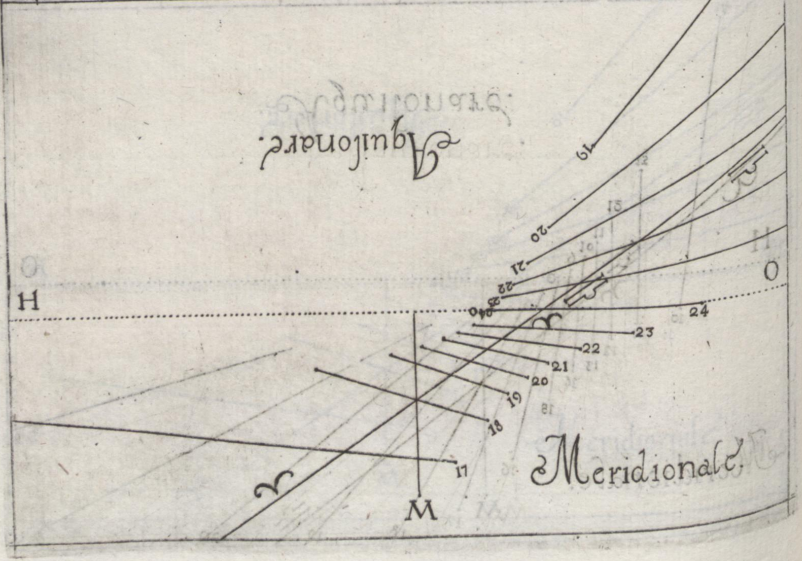
Tab. LXXXI. Declinatio ad Ort. Gra. 45. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Agula
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP	MG	MP	MG	MP	M
23	273	8 1587	15				1
22	285	5 54	53	21	02	0	2
21	291	19 26	2	11	82	21	3
20	297	20 15	38	307	54	150	4
19	303	51 9	55	315	45	38	5
18	312	38 6	0	324	45	26	6
17	329	34 3	0	336	19	13	7
16	43	37 1	22	352	37	9	8
15	104	39 3	22	16	22	7	9
14	119	37 6	29	45	45	7	10
13	127	20 10	33	71	54	8	11
12	133	59 16	41	90	0	12	12
11	140	4 28	15	102	43	18	13
10	146	22 63	43	112	19	30	14
9				120	22	81	15
8					6	85	16
					94	45	151



P2

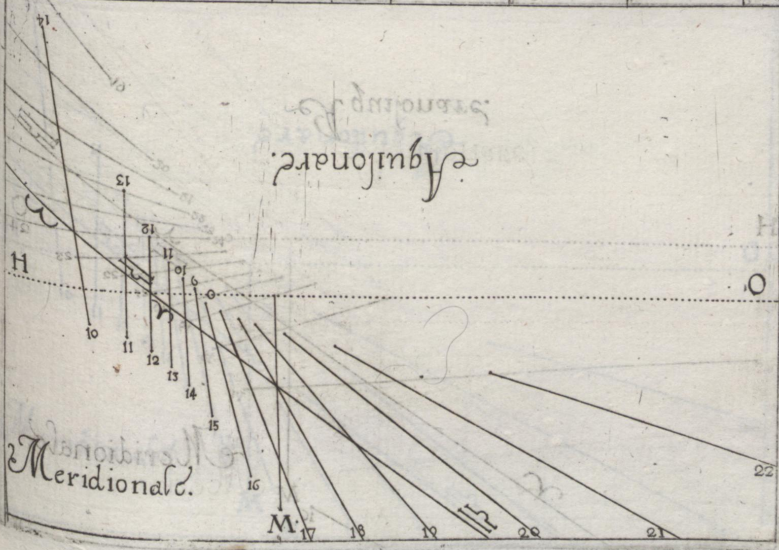
Tab. LXXXXXII Declinatio ad Occas. Gra. 45. Lat. 45.												H.	
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Umbra.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M.	P.	G.	M.	P.	G.	M.	P.				
15							26	35	606	52	9		
16				52	6	150	15	18	13	55	54	8	
17	77	51	96	34	44	15	38	11	8	3	29	56	7
18	71	20	34	16	35	15	20	47	355	29	21	2	6
19	65	15	19	15	23	41	13	26	340	23	1	14	5
20	59	4	12	5	7	23	9	24	323	35	16	12	4
21	51	59	7	35	343	38	7	20	306	52	17	34	3
22	40	8	4	13	314	15	7	3	292	6	21	51	2
23	3	20	1	42	288	6	8	57	279	54	31	54	1
24	270	0	2	16	270	0	12	0	270	0	63	43	24
25	245	26	5	2	257	19	28	4					23
26	235	48	8	37	247	41	30	54					22
27	228	42	13	38	239	38	81	6					21
28	222	33	22	5									20
29	216	27	41	51									19
30	209	46	175	17									18



45.	H. Anni.
cri.	bra.
M	o
52 9	8
54 8	7
56 7	6
2 6	5
14 5	4
12 4	3
34 3	2
51 2	1
54 1	0
43 24	23
23	22
22	21
21	20
20	19
19	18

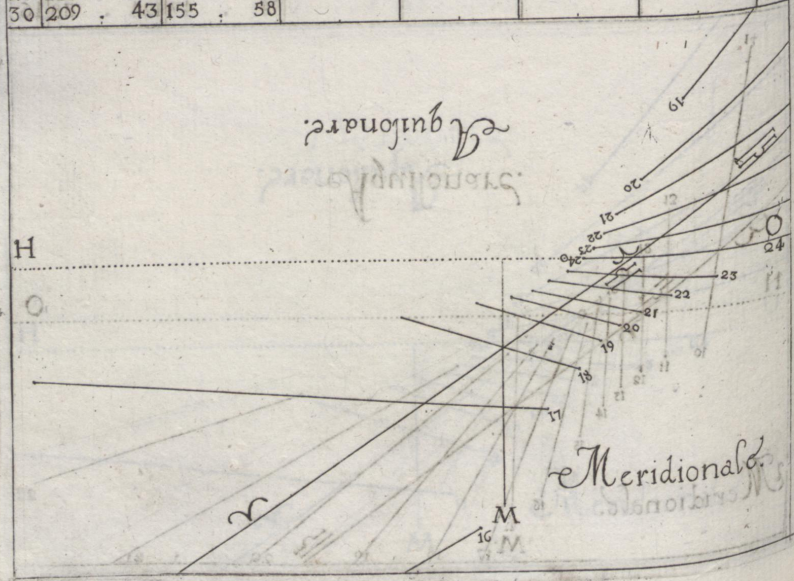
Tab. LXXXIII. Declinatio ad Ort. Gra. 46. Lat. 45.

Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Anni.
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G . M P . M G . M P . M G . M P . M						
23 278 . 9 1290 . 15						1
22 285 . 2 59 . 36						2
21 291 . 11 27 . 10						3
20 297 . 2 16 . 9 307 . 54 182 . 17						4
19 302 . 53 10 . 13 315 . 31 39 . 52						5
18 311 . 7 6 . 12 324 . 17 21 . 17						6
17 326 . 38 31 . 8 335 . 28 13 . 38 336 . 50 96 . 21						7
16 36 . 38 1 . 15 351 . 21 9 . 28 346 . 47 37 . 52						8
15 105 . 40 3 . 9 14 . 45 7 . 15 358 . 14 24 . 2						9
14 120 . 13 6 . 15 44 . 30 6 . 51 12 . 8 18 . 20						10
13 128 . 29 10 . 16 71 . 17 8 . 19 28 . 31 16 . 5						11
12 134 . 30 16 . 15 90 . 0 11 . 33 45 . 30 16 . 15						12
11 140 . 26 27 . 24 102 . 51 17 . 24 61 . 29 18 . 53						13
10 146 . 31 60 . 31 112 . 27 29 . 27 74 . 59 25 . 17						14
9 151 . 15 . 120 . 27 73 . 25 86 . 55 41 . 24						15
8 157 . 15 . 124 . 27 73 . 24 . 47 124 . 38						16



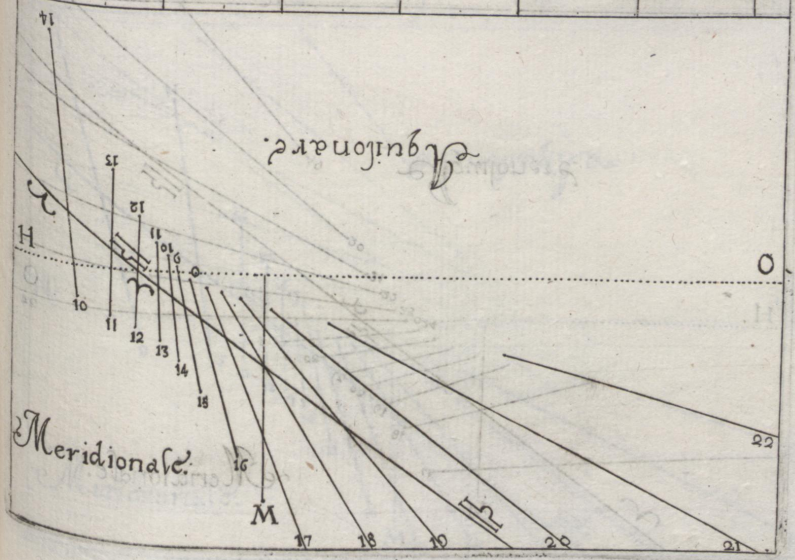
Tab. LXXXIV. Declinatio ad Occas. Gra. 46. Lat. 45. XXX

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Merid.
	Arcus.	Vmbra	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P .	MG .	M P .	MG .	M P .	M
15					26	35 082 .	43 9
16			52 .	5 182 .	17 18 .	25 57 .	21 8
17	77 .	52 112 .	17 44 .	29 39 .	52 8 .	26 30 .	9 7
18	71 .	27 36 .	11 35 .	43 21 .	17 356 .	3 20 .	58 6
19	65 .	18 19 .	54 24 .	32 13 .	38 341 .	2 17 .	2 5
20	59 .	25 12 .	27 8 .	39 9 .	28 324 .	9 15 .	53 4
21	52 .	31 7 .	49 348 .	15 7 .	15 307 .	17 17 .	13 3
22	42 .	5 4 .	23 315 .	30 6 .	51 292 .	18 21 .	3 2
23	9 .	2 1 .	44 288 .	43 8 .	19 279 .	58 39 .	20 1
24	270 .	0 2 .	3270 .	0 11 .	35 270 .	0 58 .	7 24
25	244 .	23 4 .	49 287 .	9 17 .	24 31 .	0 18 .	8 23
26	235 .	46 8 .	22 247 .	33 29 .	27 31 .	0 18 .	22
27	228 .	3 13 .	17 239 .	33 73 .	25 45 .	0 18 .	21
28	222 .	10 21 .	29 18 .	0 58 .	51 18 .	0 18 .	20
29	216 .	14 40 .	18 8 .	0 18 .	0 18 .	21 .	17 19
30	209 .	43 155 .	58				18

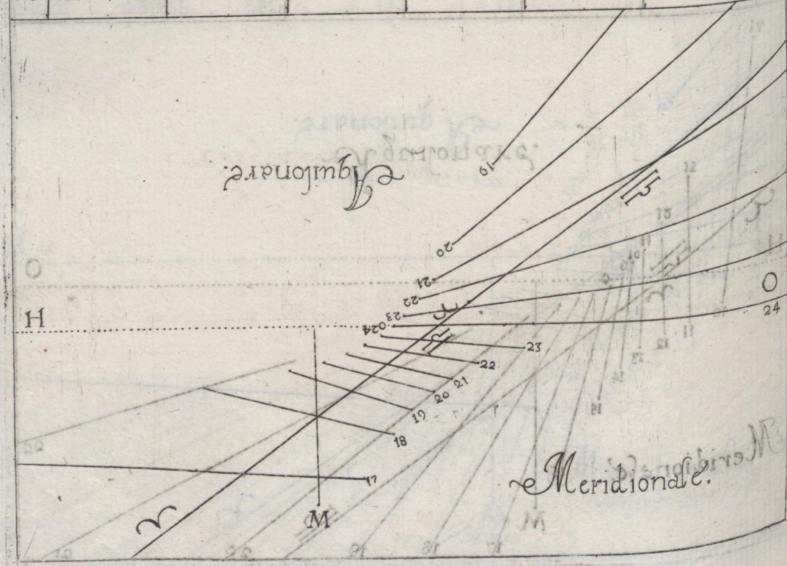


Tab. LXXXV. Declinatio ad Ort. Gra. 47. Lat. 45.

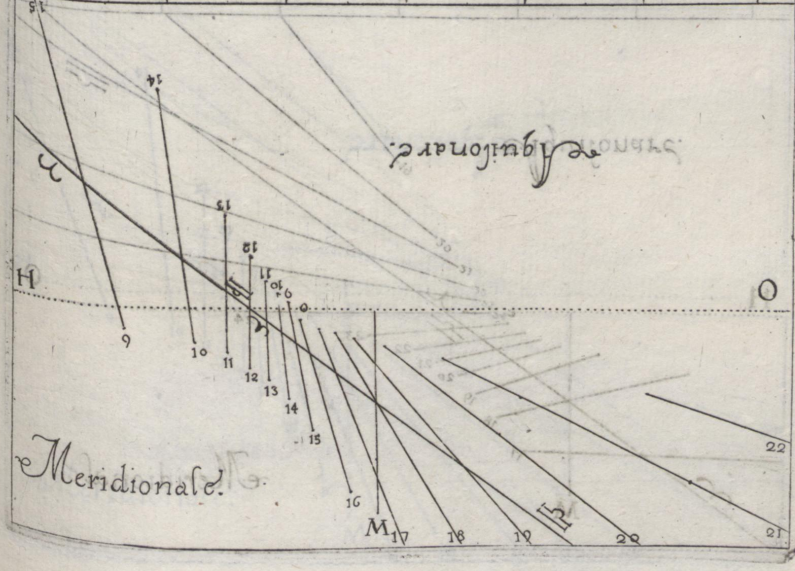
H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aquilo.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.	M.
22	284	58 65	58				2
21	290	59 28	29				3
20	296	42 16	42 307	55 230	17		4
19	302	39 10	31 315	18 41	43		5
18	309	42 6	24 323	49 21	48		6
17	323	9 3	15 334	42 13	51 337	44 102	15 7
16	26	58 1	8 350	7 9	31 346	38 38	26 8
15	106	51 2	56 13	16 7	11 357	43 24	5 9
14	121	38 6	1 43	10 6	39 11	28 18	11 10
13	128	43 9	59 70	45 8	2 27	41 18	49 11
12	135	2 15	50 90	0 11	11 44	57 18	50 12
11	140	44 26	36 103	1 16	53 61	9 18	16 13
10	146	42 57	41 112	36 28	8 74	51 24	25 14
9	153	24 68 96	29 120	30 67	2 85	53 38	57 15
8					94	47 107	36 16



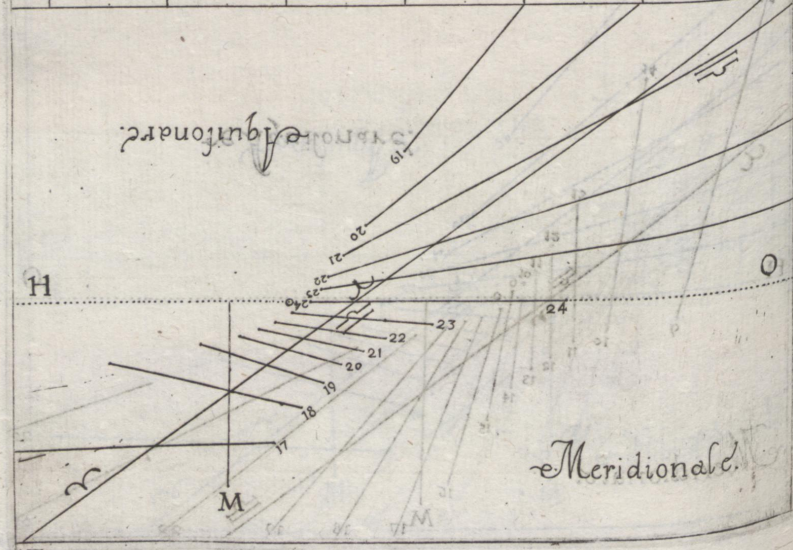
Tab. LXXXVI		Declinatio ad Occas. Gra. 47. Lat. 45.										H. Aquil.
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancer.			H. Aquil.		
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.			
	G.	M	P	M	G	M	P	M	G		M	
15								26	36	2152.	16	9
16				52	5	230		1718	3659		6	8
17	77	54	258	50	44	4241		438	5030		23	7
18	71	33	38	25	36	1121		48356	3720		56	6
19	66	48	20	43	25	1813		51341	4316		50	5
20	59	54	12	50	9	539		31324	4715		53	4
21	52	42	8	2	346	447		11307	4516		33	3
22	44	23	4	32	316	506		39292	3320		18	2
23	16	32	1	48	289	158		2280	128		54	1
24	270	0	1	40	270	011		11270	053		39	24
25	243	15	4	36	256	5916		53261	52781		14	23
26	233	19	8	6	247	2428		8			22	21
27	227	34	12	57	239	2967		5028			21	20
28	221	45	20	54	223	3425		43			48	19
29	215	58	38	51	217	1955		024			21	18
30	209	38	141	10								19



Tab. LXXXVII.		Declinatio ad Ort. Gra. 48. Lat. 45.												
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquil.				
	Arcus.		Vmbra	Arcus.		Vmbra	Arcus.		Vmbra					
	G.	M.	P.	G.	M.	P.	G.	M.	P.		M.			
20	284	56	72	14										2
21	290	51	29	44										3
20	296	20	17	15	307	49	314	49						4
19	302	10	10	50	315	6	34	10						5
18	308	15	6	37	323	23	22	21						6
17	319	48	3	23	333	54	14	3	337	37	108	7	7	
16	17	37	1	8	2	348	52	9	35	346	20	38	58	8
15	108	25	2	43	11	28	7	7	357	13	24	6	9	
14	122	12	3	48	41	1	6	8	28	10	49	18	3	10
13	129	46	9	43	70	17	7	44	27	1	15	33	11	
12	135	34	15	26	90	00	10	48	44	26	15	26	12	
11	141	3	25	42	103	11	16	11	60	50	17	39	13	
10	146	51	54	58	112	46	26	56	74	43	23	14	14	
9	153	25	41	37	53	120	36	61	44	85	52	36	32	15
8									24	48	90	57	16	



LXXXV		Declinatio ad Occas Gra. 48. Lat. 45.										LXXX	
H Merid		Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H Aquil		
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.			
		G.	M.	P.	M.	G.	M.	P.	M.	G.			
13											9		
16					52	11	1314	49	18	49	60	47	8
17	77	54	165	24	44	54	43	43	9	13	30	37	7
18	71	39	40	39	36	37	22	21	357	14	20	52	6
19	66	0	21	29	26	6	14	3	342	24	16	38	5
20	60	29	13	14	11	8	9	35	325	27	15	13	4
21	53	23	8	17	348	32	7	7	308	11	16	5	3
22	46	8	4	43	318	9	6	28	292	46	19	33	2
23	23	29	1	51	289	43	7	44	280	6	27	30	1
24	270	0	1	37	270	0	10	48	270	0	49	17	24
25	241	54	4	23	256	49	16	11	261	52	271	14	23
26	232	59	7	52	257	14	26	56	24	52	271	14	22
27	226	59	12	37	239	24	61	44	185	48	271	14	21
28	221	21	20	21	21	10	66	0	185	48	271	14	20
29	215	44	37	27	27	10	66	0	185	48	271	14	19
30	209	34	126	34	34						22	21	18

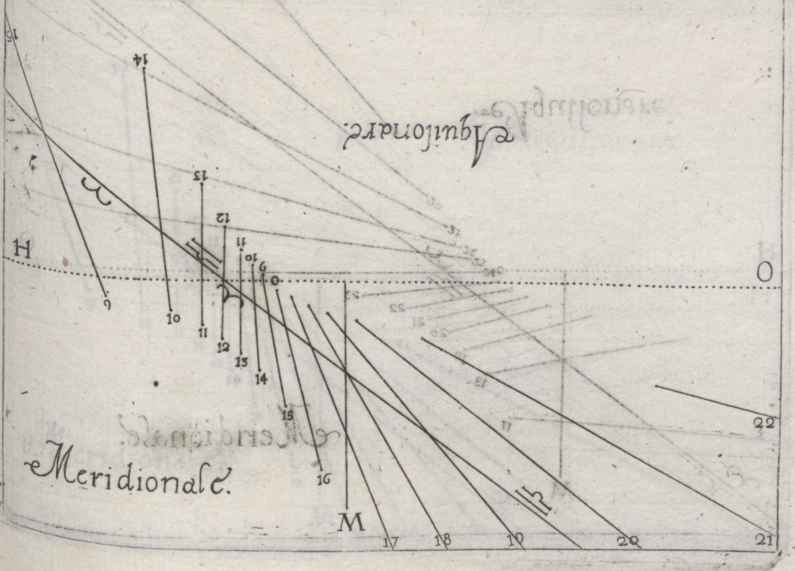


45. XXXX

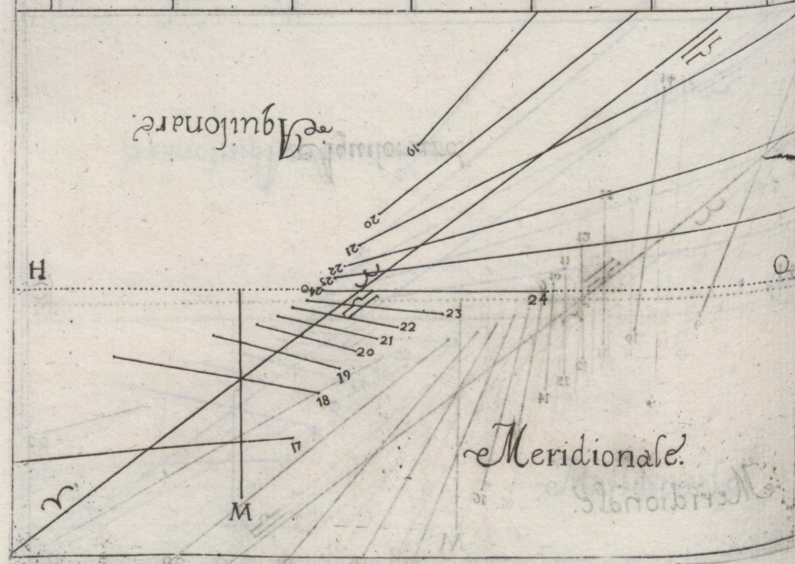
ncr.	bra.	HAguil.
M		
9		
47 8		
37 7		
52 6		
38 5		
13 4		
5 3		
33 2		
30 1		
17 24		
14 23		
22		
21		
20		
19		
18		

Tab. LXXXIX. Declinatio ad Ort. Gra. 49. Lat. 45.

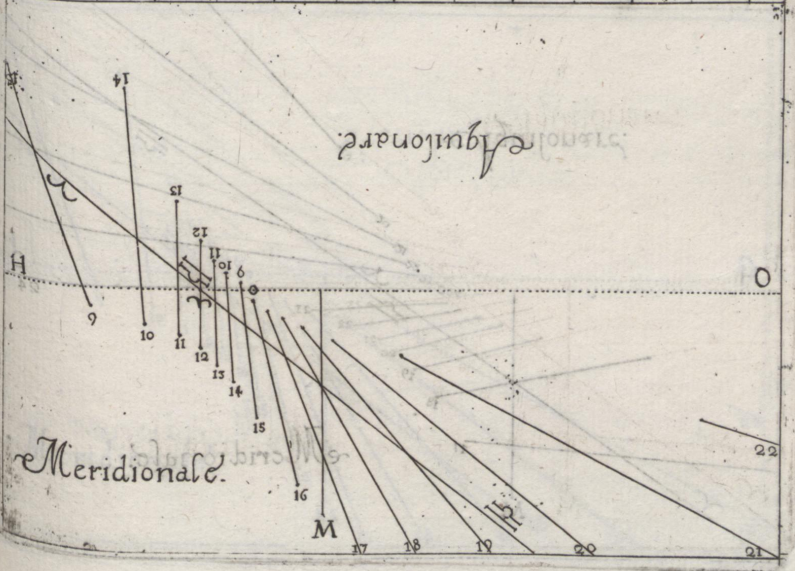
HMeid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		HAguil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
22	284	53 81	29	10	20	00	2
21	290	42 31	17	0	20	00	3
20	296	05 17	51	307	40	496	4
19	301	27 11	10	314	56	46	5
18	307	53 6	49	322	58	22	6
17	317	42 3	32	333	10	14	7
16	328	31	1	347	40	9	8
15	109	48 21	031	90	49	71	9
14	123	51 5	035	40	25	6	10
13	130	28 9	27	69	44	7	11
12	136	9 15	3	90	0	10	12
11	141	26 25	7	103	22	15	13
10	147	5 52	40	112	58	25	14
9	153	26 19	67	120	42	57	15
8							16



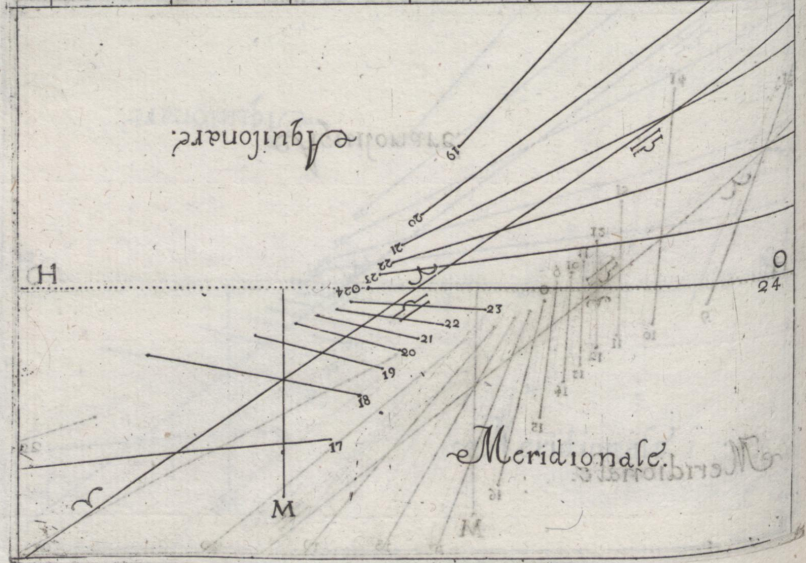
Tab. C.		Declinatio ad Occas. Gra. 49. Lat. 45.										H. Merid.	
H. Merid.	Tropic. Caprie.			Aequinoctialis.			Tropic. Canceri.			H. Equino.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M. P.	M. G.	G.	M. P.	M. G.	G.	M. P.	M.				
16				52	20	496	27	18	59	62	39	8	
17	77	56	236	54	45	4	46	0	9	35	30	52	7
18	71	44	43	25	37	2	22	35	357	46	20	50	6
19	66	14	22	20	26	50	14	16	343	5	16	127	5
20	60	48	13	39	12	20	9	39	326	4	14	56	4
21	54	37	8	32	350	11	7	4	308	39	13	40	3
22	47	56	4	53	319	33	6	18	293	0	18	53	2
23	28	16	1	57	290	16	7	29	280	10	26	19	1
24	270	0	1	23	270	0	10	27	270	0	46	52	24
25	240	22	4	10	256	38	15	33	261	53	219	15	23
26	232	8	7	38	247	2	25	47					22
27	226	14	12	18	239	18	57	27					21
28	220	51	19	50									20
29	218	26	36	15									19
30	209	26	117	8									18



Tab. Cl.		Declinatio ad Ort. Gra. 50. Lat. 45.												
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquil.				
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.					
	G.	M	P.	M	G.	M	P.	M	G.		M	P.	M	
22	284	43	96	52	519	51	52							2
21	290	37	32	38	52	519	51	52	285	12				3
20	295	47	18	23	307	48	197	21	285	12				4
19	300	54	11	27	314	48	47	55	285	12				5
18	305	42	7	32	322	37	23	32	285	12				6
17	315	11	3	40	332	31	14	19	337	30	120	14		7
16	355	27	0	59	346	36	9	42	345	51	39	54		8
15	111	20	2	20	8	24	7	00	1	356	22	24	9	9
14	125	7	5	25	39	17	6	0	8	9	40	17	46	10
13	131	27	9	14	69	25	7	13	25	49	15	5		11
12	135	45	14	41	90	0	10	6	45	28	14	42		12
11	141	51	24	32	103	52	15	9	60	19	16	35		13
10	147	17	50	49	113	13	25	27	74	34	21	32		14
9					120	55	53	46	85	56	32	51		15
8								94	54	72	37	16		

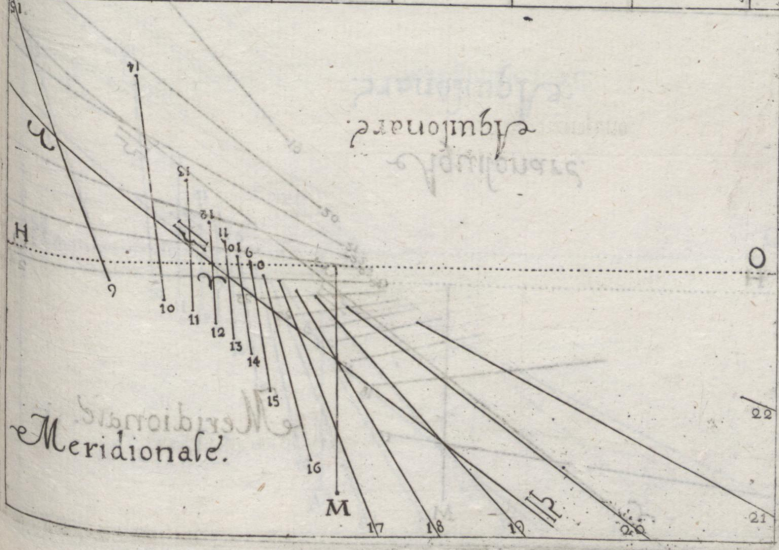


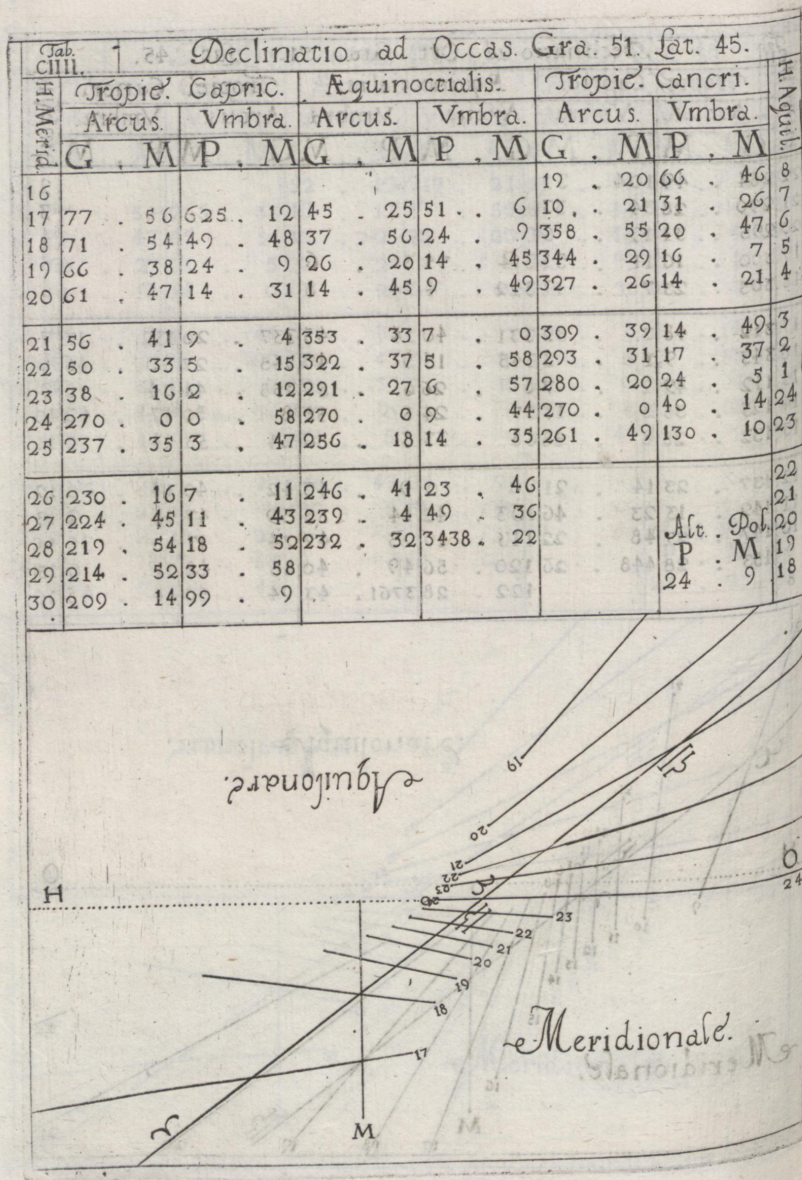
Declinatio ad Occas. Gra. 50. Lat. 45.													
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Canori.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P	M	G.	M P	M	G.	M P	M	G.	M P	M	
16				52	12	917	21	19	6	64		36	8
17	77	51	296	38	45	12	47	55	9	54	31	00	7
18	71	47	45	57	37	23	23	23	358	14	20	45	6
19	66	27	23	5	27	29	14	19	343	39	16	14	5
20	61	18	14	0	13	24	9	42	326	36	14	37	4
21	56	13	8	46	351	36	7	21	309	0	15	14	3
22	49	17	5	2	320	43	6	18	293	8	18	16	2
23	32	56	2	2	290	35	7	13	280	10	25	14	1
24	269	41	1	14	270	0	10	6	270	0	43	33	24
25	239	10	4	1	256	8	15	9	261	47	153	23	23
26	231	24	7	27	246	47	25	27					22
27	225	27	12	3	239	5	53	46					21
28	220	23	19	26									20
29	215	8	35	18									19
30	209	19	109	14									18
										Alt.	Pol.		
										P	M		
										23	23	18	



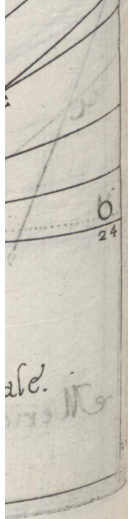
45. 12
 136. 8
 140. 7
 145. 6
 149. 5
 153. 4
 157. 3
 161. 2
 165. 1
 169. 24
 173. 23
 177. 22
 181. 21
 185. 20
 189. 19
 193. 18

Declinatio ad Ort. Gra. 51. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
22	284	49	104	31									2
21	290	28	34	33									3
20	295	31	19	36									4
19	300	16	11	51	314	35	51	26					5
18	305	23	7	17	322	4	24	48					6
17	312	48	3	52	331	40	14	45	337	20	132	17	7
16	343	9	1	53	345	15	9	49	345	27	40	46	8
15	112	42	2	57	6	26	6	59	355	44	24	18	9
14	125	35	5	11	37	24	5	58	8	50	17	42	10
13	132	28	8	58	68	33	6	56	24	53	14	50	11
12	137	23	14	21	90	20	9	43	42	40	14	20	12
11	142	13	23	46	103	42	14	35	59	47	16	2	13
10	147	27	48	22	113	19	23	47	74	17	20	36	14
9	153	28	448	26	120	56	49	40	85	48	31	0	15
8				122	28	3761	43	94	50	64	45	16	

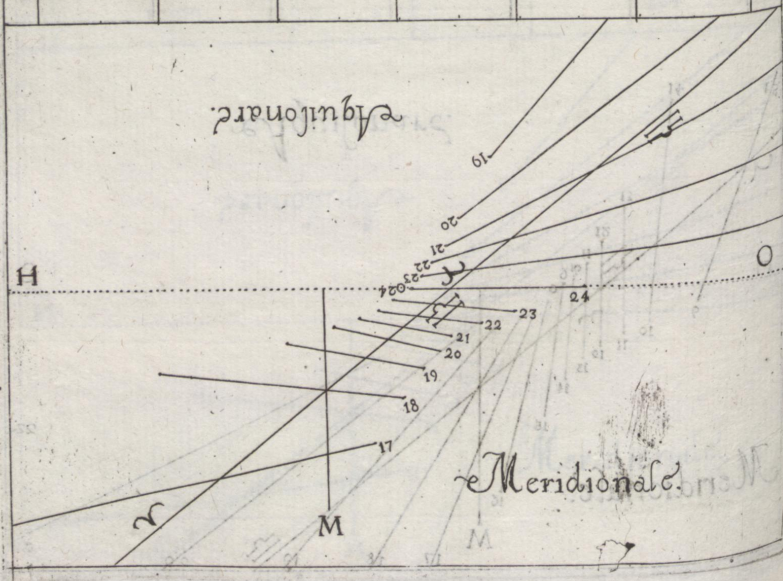




45.		H. Aquila
ncri.		
membra.	M	
.	46	8
.	26	7
.	47	6
.	7	5
.	21	4
.	49	3
.	37	2
.	5	1
.	14	24
b.	10	23
		22
		21
ct.	Dof	20
	M	19
	9	18



Tab. Cvi.		Declinatio ad Occas. Gra. 52. Lat. 45.												H. Agull.	
H. Merid.		Tropie. Capric.		Aequinoctialis.				Tropie. Cancr.							
		Arcus.		Vmbra		Arcus.		Vmbra		Arcus.				Vmbra.	
		G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	G.	MP.			MG.	MP.
16										19	31	69	0	8	
17	77	56	3174	34	45	36	54	8	10	45	31	44	7		
18	71	58	53	28	38	14	24	49	359	34	20	47	6		
19	66	50	25	8	29	3	15	0	345	14	15	58	5		
20	62	14	15	0	15	57	9	55	328	10	14	5	4		
21	57	33	9	22	355	18	6	57	310	11	14	24	3		
22	51	10	5	28	323	15	5	48	293	49	17	1	2		
23	41	59	2	20	292	6	6	40	280	27	23	1	1		
24	270	0	0	46	270	0	9	23	270	0	37	38	24		
25	235	23	3	35	256	5	14	5	261	49	108	19	23		
26	229	7	6	58	246	28	22	51	0				22		
27	224	39	11	25	238	54	46	34	3				21		
28	219	29	18	23	232	19	699	12	32				20		
29	214	37	32	51									19		
30	209	11	92	49									18		
											Alt. Pol.				
											P. M.				
											74 . 42 18				



45.

cri.
kra.

M

0	8
44	7
47	6
58	5
5	4

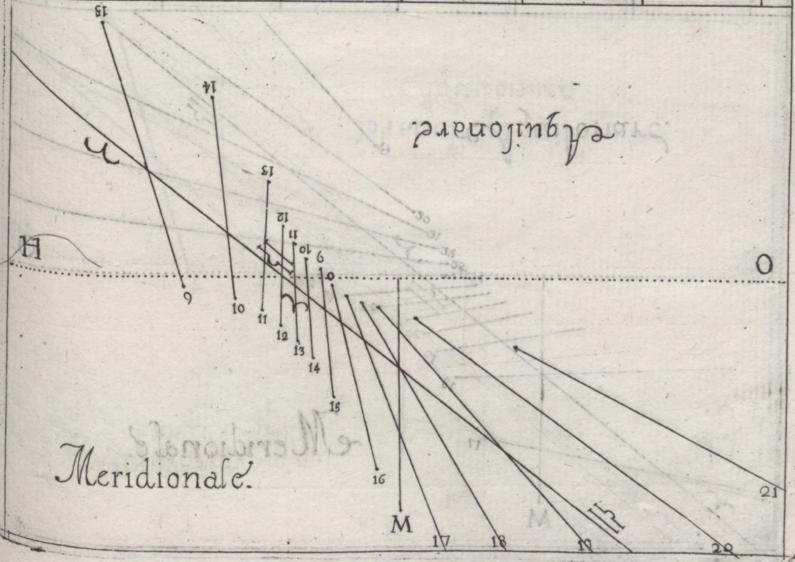
24	3
11	2
13	1
38	24
19	23

22
21
20
19
18

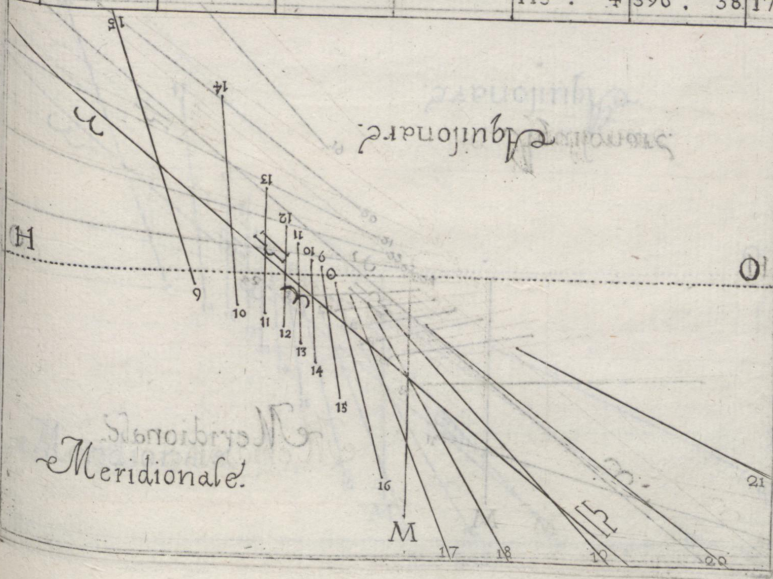
M

42

Declinatio ad Ort. Gra. 53. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G	M	P	M	G	M	P	M	G	M	P	M
22	284	45	166	4							
21	290	12	38	44							
20	294	57	20	53							
19	299	23	16	36	314	16	57	31			
18	303	50	7	46	321	24	25	32			
17	310	21	4	13	330	11	15	17	337	11	192
16	323	34	1	14	342	53	10	0	344	55	42
15	120	31	1	43	3	0	6	56	354	46	24
14	129	17	4	47	33	58	5	39	7	29	17
13	134	5	8	29	67	10	6	26	23	28	14
12	138	37	13	40	90	0	9	2	41	23	13
11	143	2	22	34	104	10	13	36	58	58	15
10	147	55	44	48	113	46	22	0	73	57	19
9	153	31	290	23	121	12	43	52	88	43	28
8				127	42	434	8	94	52	54	29
7								192	0	1793	40

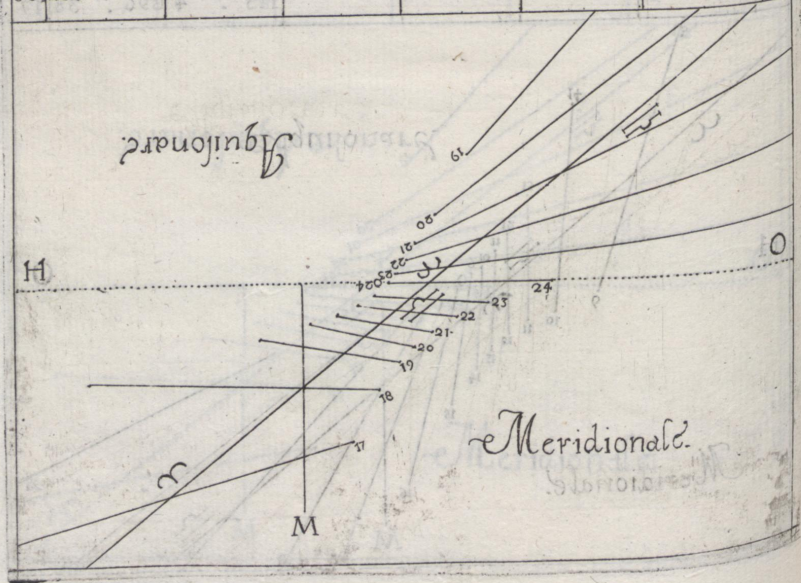


5.		Tab. CVIII.		Declinatio ad Ort. Gra. 54. Lat. 45.									
Cri.	H. Aquilo	H. Merid.	Tropic. Capric.		Æquinoctialis.		Tropic. Cancr.		H. Merid.	H. Aquilo			
			Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.					
Ord.	M		G	M P	M G	M P	M G	M P	M				
	41	8	22	284	44	189	51				2		
	4	7	21	290	7	41	0				3		
	47	6	20	294	47	21	17				4		
	50	5	19	298	53	12	59	314	5	61	21		
	50	4	18	302	59	8	1	321	1	26	16		
	1	3	17	310	8	4	24	329	38	15	34		
	27	2	16	316	20	1	22	341	46	10	7		
	8	1	15	319	43	1	33	341	16	6	56		
	36	24	14	331	3	4	36	352	13	5	31		
	32	23	13	335	0	8	16	66	25	6	11		
	22		12	339	21	13	22	90	0	8	43		
	21		11	343	27	22	0	104	18	13	39		
	20		10	348	5	43	2	113	58	21	11		
	19		9	353	33	236	54	121	21	41	26		
	8							127	43	267	42		
	32	18	7								94		
											113		
											4		
											396		
											38		
											17		



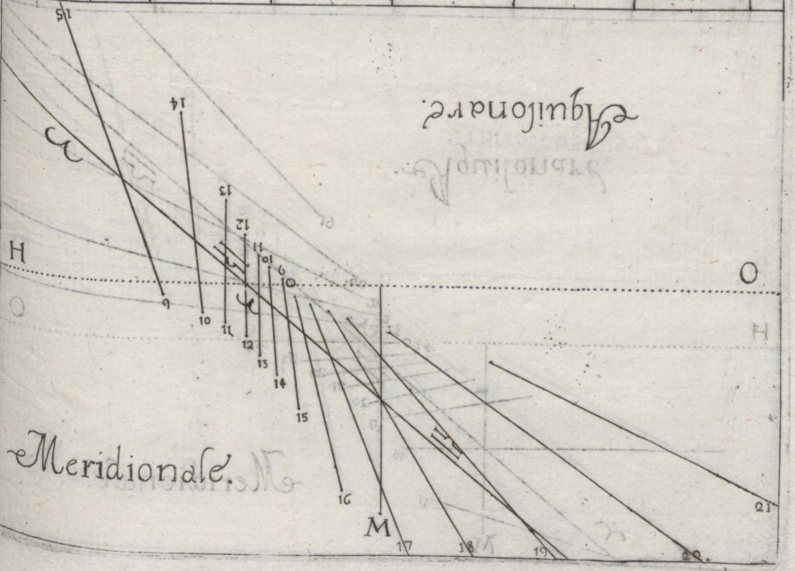
Tab. CX. Declinatio ad Occas. Gra. 54. Lat. 45.

H. Merid.	Tropie. Capric.		Aguinoctialis		Tropie. Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	M G.	M P.	M G.	M P.	M
16					19	50 74	14 8
17			45	55 61	21 11	20 32	26 7
18	72	6 63	12 38	59 26	16 01	40 20	48 6
19	67	12 27	23 30	22 15	34 34 6	43 15	42 5
20	62	53 18	59 18	14 10	7 32 9	40 13	35 4
21	58	2 0	55 35 8	44 6	56 31 1	19 13	39 3
22	55	16 5	53 32 7	47 5	31 29 4	26 15	55 2
23	48	33 2	39 29 3	35 6	11 28 0	37 21	11 1
24	27 0	0 0	22 27 0	0 8	43 27 0	0 33	35 24
25	23 3	17 3	13 25 5	42 13	2 26 1	47 80	27 23
26	22 6	36 6	33 24 6	2 21	11 22	51 19	22
27	22 2	30 10	53 23 8	39 41	26 0	20 5	21
28	21 8	45 17	32 23 2	17 26 7	42 2	31 19	20
29	21 4	0 30	56 22	1 10	19 12	38 2	19
30	20 8	57 81	46 24	54 24	79 1	26	18

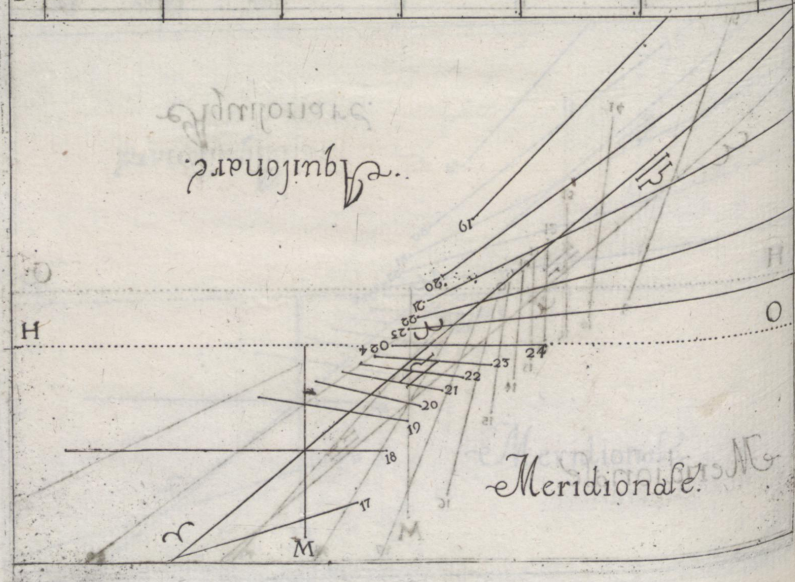


45.	
cri.	H. Aquilo
bra.	
M	
14 8	
26 7	
48 6	
42 5	
35 4	
39 3	
55 2	
11 1	
35 24	
27 23	
22	
21	
20	
19	
16 18	

Declinatio ad Ort. Gra. 55. Lat. 45.									
H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aquilo		
	Arcus.	Vmbra	Arcus.	Vmbra	Arcus.	Vmbra			
	G.	MP	MG	M.P	MG	MP	M		
22	284	44	287	40					
21	290	1	43	46					
20	224	25	22	8					
19	298	31	13	24	314	2	65	43	
18	302	12	8	16	320	41	27	4	
17	306	43	4	35	328	54	15	51	337
16	309	49	1	32	340	41	10	14	344
15	129	11	1	22	359	29	6	56	353
14	133	8	4	26	30	20	5	24	6
13	136	10	8	3	68	38	5	57	21
12	139	59	13	4	90	0	8	24	40
11	143	56	21	29	104	34	12	44	58
10	148	22	41	42	114	13	20	26	73
9	153	56	20	5	121	30	39	13	85
8				127		44	20	5	94
7								102	5
								256	304
									17

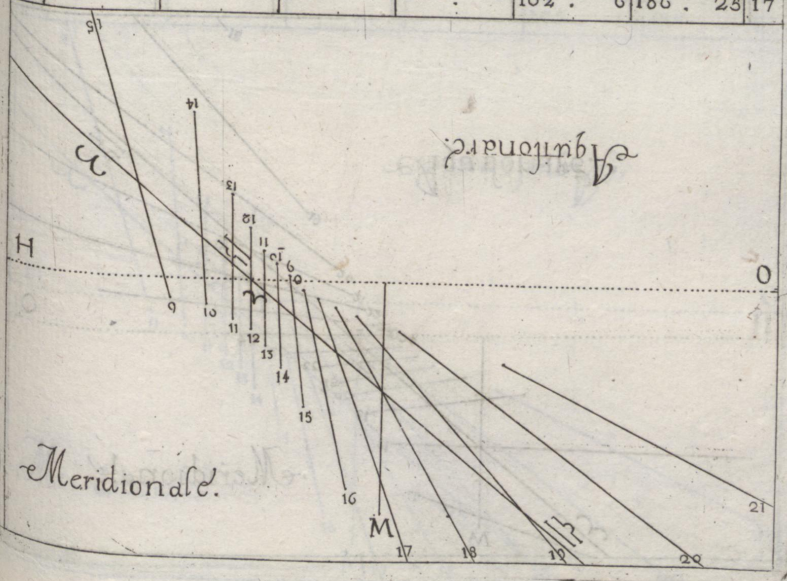


Tab. CXII.		Declinatio ad Occas. Gra. 55. Lat. 45.										H. Merid.		
		Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.								
		Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
		G.	M P.	MG.	M P.	MG.	M P.							
16						19	56	77		14	8			
17				45	58	65	43	11	50	32	46	7		
18	72	10	0	6	39	19	27	4	1	51	20	48	6	
19	67	24	28	39	31	6	15	51	34	7	26	15	34	5
20	63	10	16	30	19	19	10	14	33	0	27	13	20	4
21	59	26	10	16	0	31	6	56	31	1	34	13	10	3
22	55	39	6	5	32	9	40	5	24	29	4	15	23	2
23	52	51	2	49	29	4	22	5	57	28	0	46	20	1
24	270	0	0	12	270	0	8	24	270	0	31	53	24	
25	228	50	3	4	255	25	12	44	261	46	72	46	23	
26	225	8	6	22	245	47	20	25					22	
27	221	40	10	38	238	30	39	13					21	
28	217	58	17	10	232	16	20	5					20	
29	213	48	30	2									19	
30	208	46	77	36									18	



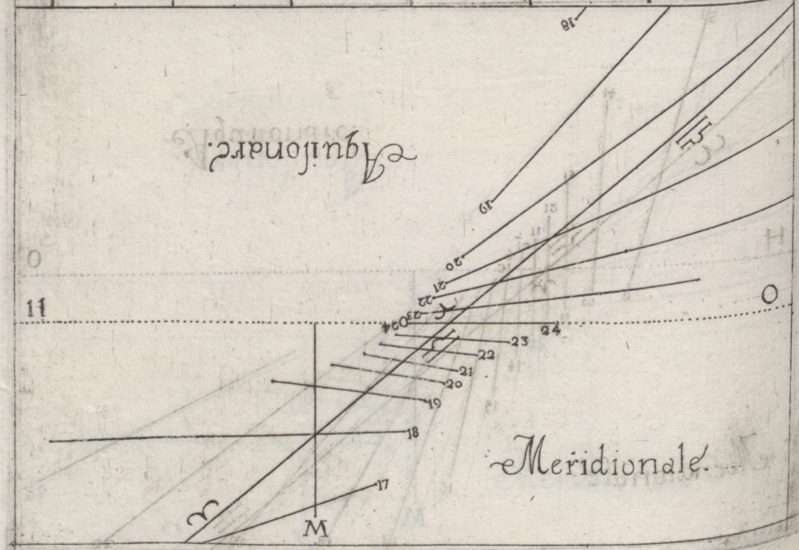
5.
ncri.
nbra.
M
14 8
46 7
48 6
34 5
20 4
19 3
23 2
26 1
53 24
46 23
22
21
20
19
8
4
18

Tab. cxliii. Declinatio ad Ort. Gra. 56. Lat. 45.											
Tropie Capric.				Aequinoctialis.				Tropie Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.
22	284.	43	4 4	24							
21	289.	55	46	37							
20	294.	19	22	57							
19	298.	1	13	49	313.	50	70	42			
18	301.	16	8	33	320.	18	27	52			
17	304.	7	4	48	328.	19	16	9	337.	1	212.
16	301.	33	1	42	339.	33	10	21	344.	6	44.
15	138.	38	1	13	357.	48	6	56	353.	18	24.
14	134.	50	4	15	28.	24	5	16	5	25	17.
13	137.	38	7	52	64.	46	5	42	21.	1	13.
12	140.	44	12	47	90.	0	8	6	39.	19	12.
11	144.	23	20	59	104.	48	12	18	57.	40	13.
10	148.	37	40	18	114.	27	19	42	73.	23	17.
9	153.	39	182.	17	121.	40	37	16	85.	37	24.
8					127.	47	166.	4	94.	56	43.
7								102.	6	186.	25

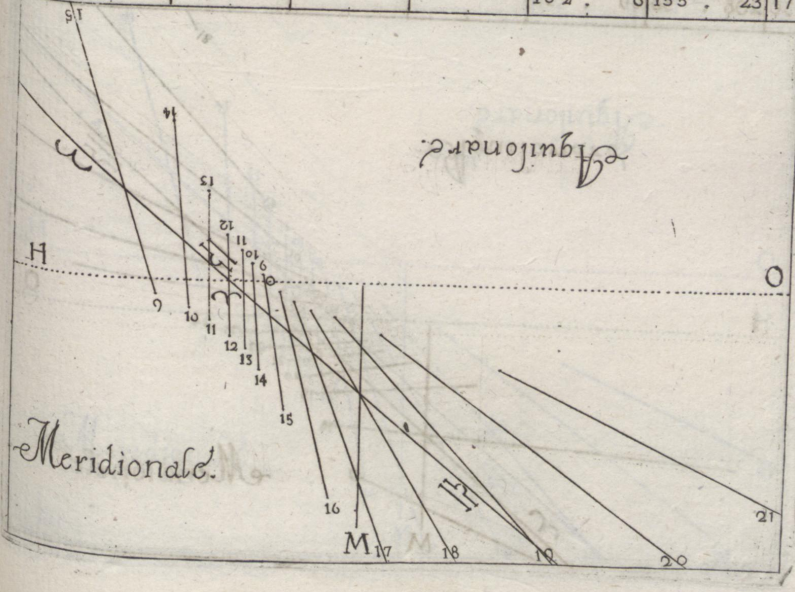


Tab. CXIII. Declinatio ad Occas. Gra. 56. Lat. 45.

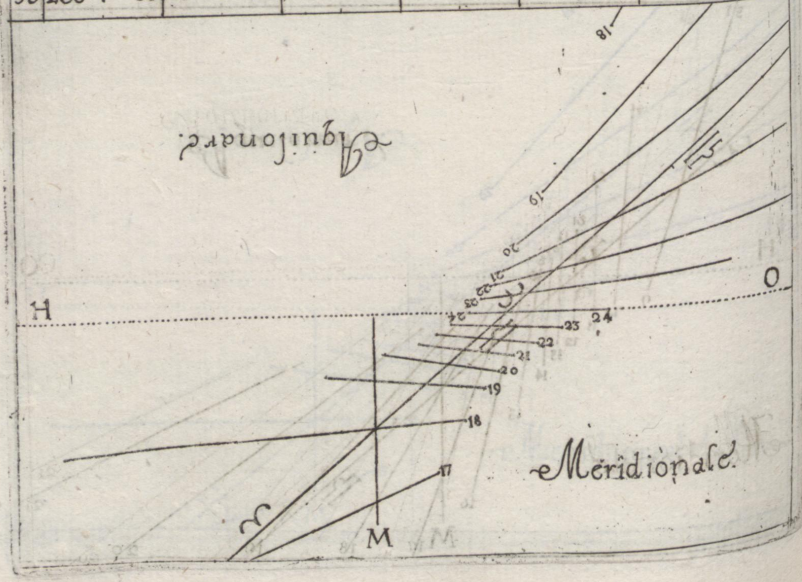
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquid.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	C.	M. P.	M. G.	M. P.	M. G.	M. P.	M.
16					20	19 80	8 8
17			46	10 70	42 12	12 33	7 7
18	72	13 77	13 39	42 27	52 1	49 20	50 6
19	67	33 29	59 31	41 16	9 348	13 15	27 5
20	63	34 17	4 20	27 10	21 331	13 13	8 4
21	60	8 10	34 2	12 6	56 312	30 12	57 3
22	57	1 6	19 331	36 8	16 295	4 14	54 2
23	54	47 3	0 298	14 5	42 280	53 19	39 1
24	270	0 0	10 270	0 8	6 270	0 30	12 24
25	225	39 2	53 253	12 12	18 261	45 65	4 23
26	223	38 6	11 245	33 19	40 24	0 14	22
27	220	41 10	24 238	20 37	46 16	0 14	21
28	217	17 16	46 232	13 16 6	41 4	0 14	20
29	213	18 29	16				19
30	208	40 73	17				18



Tab. CXV.		Declinatio ad Ori Gra. 57. Lat. 45.											
H. Merid.	Tropic. Capric.				Equinoctialis.				Tropic. Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
22	284.	43	793.	40									2
21	289.	50	50.	10									3
20	293.	56	23.	54									4
19	297.	39	14.	15	313.	48	76.	20					5
18	300.	43	8.	48	320.	2	28.	44					6
17	303.	4	4.	50	327.	43	16.	27	336.	57	206.	3	7
16	301.	23	1.	52	338.	41	10.	20	343.	51	46.	26	8
15	142.	44	1.	5	356.	6	6.	57	352.	50	24.	58	9
14	137.	8	4.	6	26.	19	5.	9	4.	44	17.	15	10
13	138.	33	7.	39	63.	49	5.	29	20.	12	13.	41	11
12	141.	28	12.	30	90.	0	7.	48	38.	34	12.	30	12
11	144.	52	20.	30	105.	6	11.	53	57.	11	13.	21	13
10	148.	33	39.	1	114.	43	19.	1	73.	11	16.	33	14
9	153.	44	165.	24	121.	49	35.	29	85.	35	23.	26	15
8					127.	50	139.	59	94.	57	41.	44	16
7									102.	6	155.	23	17



Tab. CXVI.		Declinatio ad Occas. Gra. 57. Lat. 45.										H. Aquila	
H. Merid.	Tropic. Capric.			Equinoctialis			Tropic. Cancr.			H. Aquila			
	Arcus.	Vmbra		Arcus.	Vmbra		Arcus.	Vmbra					
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
16									20	13	83		52 8
17					46		12	76	20	12	32	33	31 7
18	72		15	87		48	39		57	28	44	2	23 20
19	67		40	31		28	32		17	16	27	348	58 15
20	63		48	17		40	21		19	10	28	332	2 12
21	60		35	10		54	3		54	6	57	313	9 12
22	58		0	6		32	333		41	5	9	295	23 14
23	56		48	3		11	296		41	5	27	281	0 18
24	50		0	0		16	270		0	7	48	270	0 28
25	223		9	2		42	254		54	11	53	261	42 54
26	222		14	6		0	245		17	19	1	00	01 00
27	219		52	10		10	238		11	35	29	1	00 00
28	216		43	16		24	232		10	139	59	1	00 00
29	212		58	28		30							
30	208		30	69		53							



Tab. CXVII. Declinatio ad Ort. Gra. 58. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
22	284.	34	1213.	12			2
21	289.	46	55	26			3
20	293.	53	24	53			4
19	297.	14	14	43	313.	38 83	27
18	299.	59	9	6	319.	42 29	42
17	301.	21	5	13	327.	4 16	48 336.
16	299.	4	2	3	337.	25 10	38 343.
15	154.	31	0	53	354.	22 6	59 352.
14	139.	33	3	51	24	13 5	3 4
13	139.	42	7	21	62	40 5	18 19
12	142.	16	12	14	90	0 7	30 37
11	145.	15	19	45	105	18 11	30 56
10	149.	2	37	0	114	58 18	22 72
9	153.	48	137	10	122	1 33	48 85
8					127	59 119	53 94
7							102
							8 121
							39 17

Meridionale.

Equinoctiale.

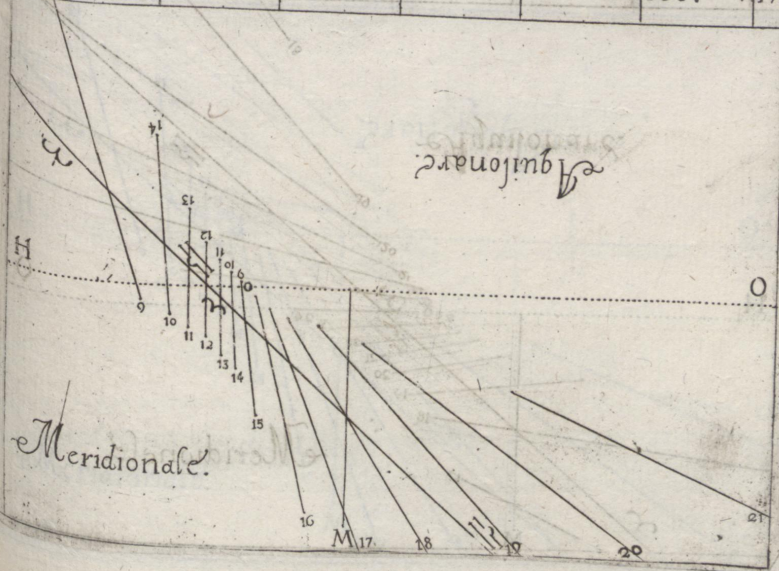
The diagram illustrates the relationship between magnetic declination and the Earth's magnetic field. A vertical line represents the magnetic meridian, labeled 'M' at the bottom and 'H' at the top. A horizontal line represents the equinoctial, labeled 'H' on the left and 'O' on the right. A series of lines, numbered 17 through 24, are drawn across the grid, representing different magnetic declinations. The word 'Meridionale' is written in cursive on the right side, and 'Equinoziale' is written in cursive on the left side.

45.
ncri.
mbra.
M
36.8
57.7
54.6
15.5
42.4

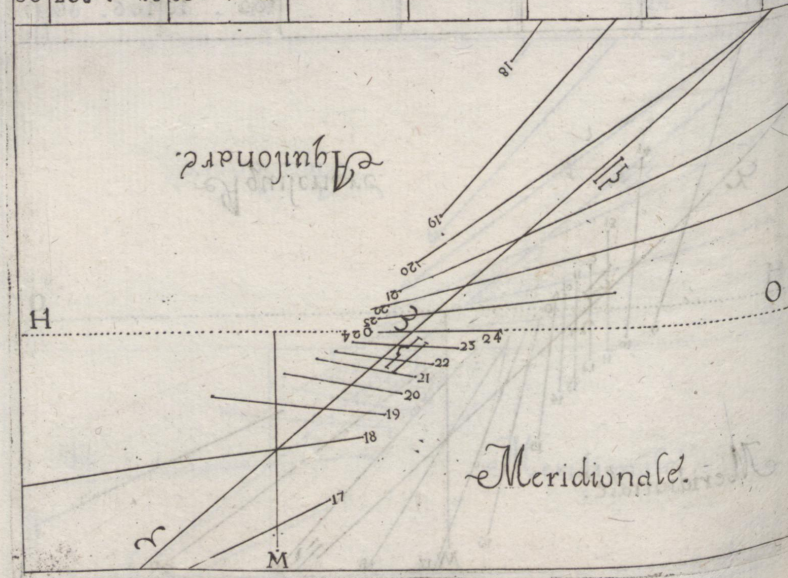
18.3
54.2
2.1
23.24
2.23

22
21
20
19
18

Tab. CXVIII. Declinatio ad Ort. Gra. 52. Lat. 45.										
H. Merid.	Tropre. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquila.
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G.	M P	MG	G.	M P	MG	G.	M P	M	
21	289	42 58	48							
20	293	41 25	56							3
19	296	53 15	11	313	37 91	59				4
18	299	21 9	24	319	24 30	44				5
17	300	32 5	25	326	29 17	10	336	52 303	10	6
										7
16	296	34 2	16	336	24 10	48	343	22 47	19	8
15	164	36 0	53	352	40 7	1	351	53 25	16	9
14	141	24 3	47	22	0 4	57	3	20 17	10	10
13	141	7 7	17	61	43 5	2	18	32 13	22	11
12	142	56 11	58	90	0 7	13	37	2 11	58	12
11	145	50 19	35	105	39 11	7	56	10 12	37	13
10	149	27 36	40	115	17 17	43	72	44 15	25	14
9	153	52 136	15	122	15 32	23	85	31 21	33	15
8				128	3 105	3	95	0 36	2	16
7							102	10 106	9	17

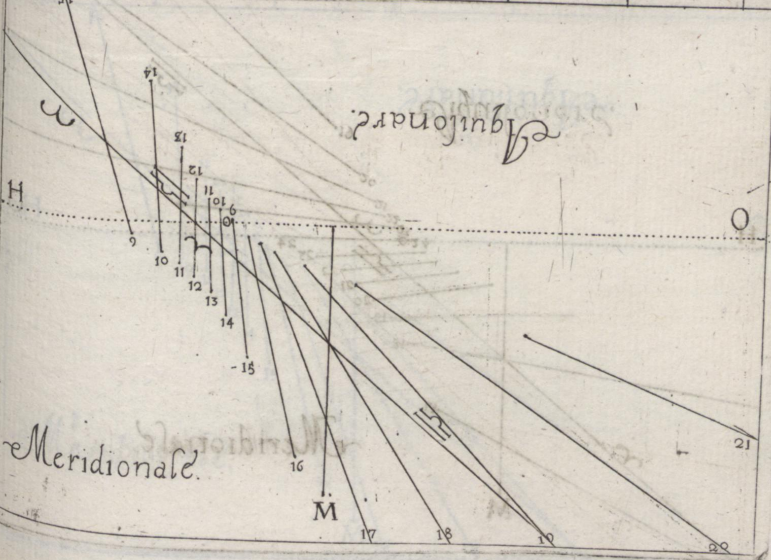


Tab. CXX.		Declinatio ad Occas. Gra. 59. Lat. 45.										H. Merid.		
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.				H. Merid.			
	Arcus.		Vmbra		Arcus.		Vmbra		Arcus.				Vmbra.	
	G .	M P .	M G	M P .	M G	M P .	M G	M P .	M G	M P .			M	
16								20	30	92	21	8		
17					46	23	91	59	13	13	34	22	7	
18	72	19	117	8	40	36	30	44	3	31	20	57	6	
19	67	56	34	49	33	31	17	10	350	31	15	9	5	
20	64	23	18	54	23	36	10	48	333	44	12	30	4	
21	61	37	11	35	7	20	7	1	314	30	12	1	3	
22	59	42	7	1	338	0	4	57	296	10	13	32	2	
23	60	22	3	34	298	17	5	2	281	15	17	39	1	
24	50	0	0	41	270	0	7	13	270	0	26	9	24	
25	215	57	2	27	254	21	11	1	261	38	50	35	23	
26	219	3	3	40	244	43	17	42	255	26	1290	15	22	
27	217	57	9	43	237	45	32	13					21	
28	215	36	15	42	231	57	108	3					20	
29	212	14	27	3									19	
30	208	10	63	29									18	

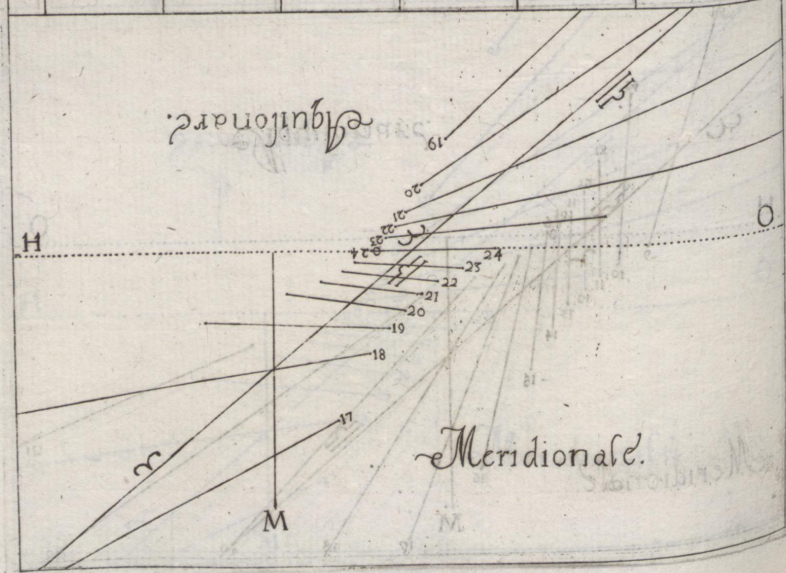


5.	
ancri.	H. Angulo
mbra.	
M	
21	8
22	7
57	6
9	5
30	4
1	3
32	2
39	1
9	24
35	23
15	22
21	
20	
Pol	
M	
44	18

Declinatio ad Ort. Gra. 60. Lat. 45.											
Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.					
Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.	
G.	M.	P.	G.	M.	P.	G.	M.	P.	G.	M.	P.
21	289	37	63	59							
20	293	31	27	5							
19	296	34	15	41	313	27	101	56			
18	298	41	9	42	319	6	31	48			
17	299	26	5	39	325	54	17	30	336	50	412
16	294	18	2	27	335	22	10	56	343	8	48
15	177	44	0	49	350	57	7	3	351	25	25
14	143	43	3	38	19	40	4	52	2	39	17
13	142	24	7	6	60	31	4	49	17	40	13
12	143	48	11	42	90	0	6	56	36	52	11
11	146	19	19	8	105	55	10	44	55	34	12
10	149	41	35	28	114	18	17	8	72	31	14
9	153	57	123	30	122	26	30	51	85	30	20
8					128	10	93	29	95	2	33
7									102	11	89
											56
											17

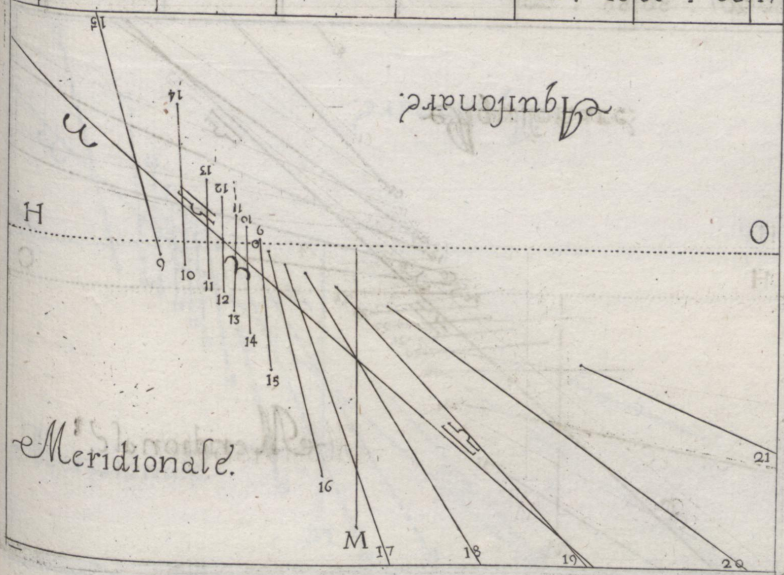


Tab. cxii.		Declinatio ad Occas. Gra. 60. Lat. 45.											
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Capric.		H. Aquilo				
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G.	MP.	MG.	MP.	MG.	MP.	M						
16							20	39	96	34	8		
17				46	33	101	56	13	35	34	51	7	
18	72	21	137	44	40	54	31	48	4	8	21	2	6
19	68	4	36	41	34	6	17	30	351	20	15	4	5
20	64	43	19	34	24	38	10	56	334	37	12	19	4
21	61	46	11	57	9	3	7	3	315	15	11	41	3
22	60	31	7	16	340	20	4	52	296	36	13	7	2
23	61	48	3	46	299	29	4	49	281	24	16	53	1
24	90	0	0	54	270	0	6	56	270	0	24	56	24
25	212	14	2	19	254	5	10	44	261	37	46	37	23
26	217	46	5	30	245	42	17	108	253	16	310	5	22
27	216	59	9	30	237	34	30	51					21
28	214	51	15	22	231	50	93	29			Ac.	Ref.	20
29	211	52	26	23							P	M	19
30	208	1	60	1							31	48	18

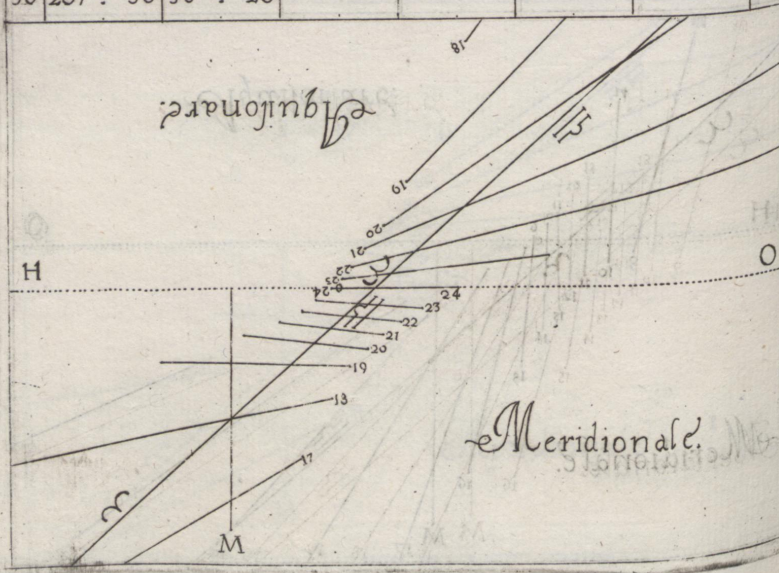


Tab. cxxiii. Declinatio ad Ort. Gra. 61. Lat. 45.

H. Merid.	Tropie. Capric.			Aequinoctialis.			Tropie. Cancr.			H. Aquila
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G.	M	P.	G.	M	P.	G.	M	P.	
21	289.	35	70	22						3
20	293.	20	28	15						4
19	296.	13	16	11	313.	31	114.	11		5
18	298.	11	10	0	318.	50	32.	56		6
17	298.	29	5	52	325.	22	17.	53	336.	7
16	292.	51	2	38	334.	26	11.	6	342.	8
15	190.	18	0	52	349.	20	7.	5	350.	9
14	146.	38	3	31	17.	24	4.	47	1.	10
13	143.	47	6	56	59.	19	4.	36	16.	11
12	144.	36	11	29	90.	0	6.	39	35.	12
11	146.	52	15	47	106.	16	10.	23	55.	13
10	150.	2	34	30	115.	56	16.	35	72.	14
9	154.	3	116	7.	122.	39	29.	33	85.	15
8					128.	12	84.	30	95.	16
7									102.	17
									13	18
									16	19
									20	20
									21	21
									22	22
									23	23
									24	24
									25	25
									26	26
									27	27
									28	28
									29	29
									30	30
									31	31
									32	32
									33	33
									34	34
									35	35
									36	36
									37	37
									38	38
									39	39
									40	40
									41	41
									42	42
									43	43
									44	44
									45	45
									46	46
									47	47
									48	48
									49	49
									50	50
									51	51
									52	52
									53	53
									54	54
									55	55
									56	56
									57	57
									58	58
									59	59
									60	60



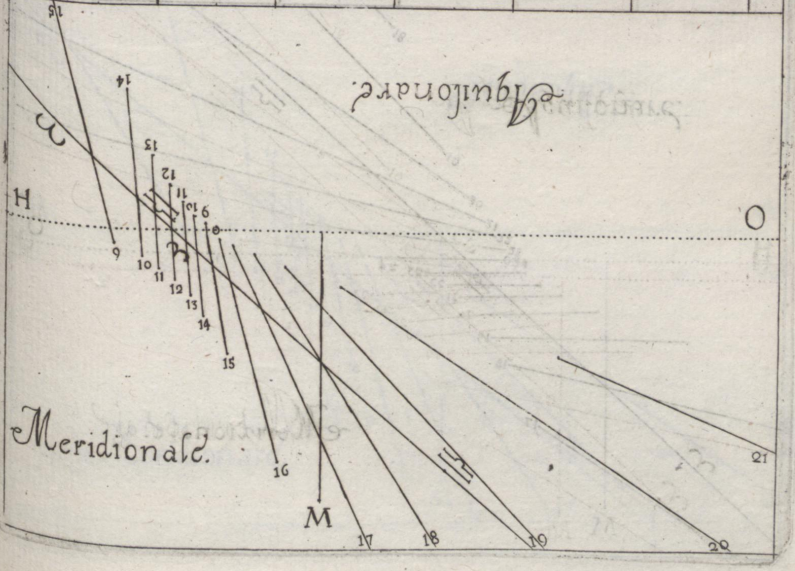
Tab. CXIII		Declinatio ad Occas. Gra. 61. Lat. 45.										H. Merid.	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M	M			
16									20	44	101	8	8
17					46	29	114	11	13	53	35	14	7
18	72	22	176	21	41	10	32	56	4	39	21	3	6
19	68	10	38	50	34	38	17	53	35	2	4	58	5
20	64	56	20	27	28	34	11	6	335	26	12	8	4
21	62	32	12	19	10	40	7	5	315	55	11	25	3
22	61	21	7	30	342	36	4	47	296	57	12	43	2
23	63	9	3	58	300	41	4	36	281	31	16	20	1
24	90	0	1	6	270	0	6	39	270	0	23	56	24
25	207	30	2	13	253	44	10	23	261	34	43	49	23
26	215	41	5	21	244	7	16	35	255	14	245	27	22
27	213	56	9	18	237	21	29	33					21
28	214	13	15	4	231	48	85	30			Alt. Pol.		20
29	211	26	25	48							P. M.		19
30	207	50	58	20							32	56	18



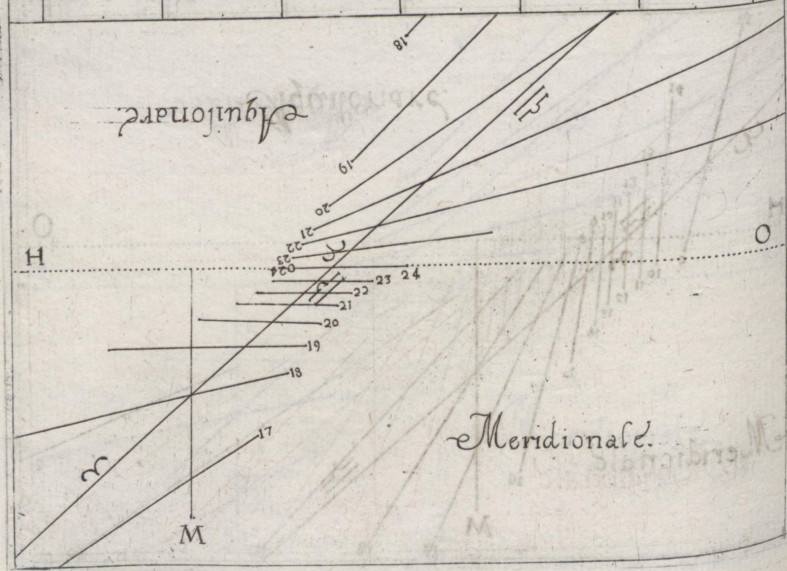
45.	H. Aquit
cri.	bra.
M	
8 8	
14 7	
3 6	
58 5	
8 4	
25 3	
43 2	
20 1	
56 24	
49 23	
27 22	
21	
Pol	
M	
56 18	

Tab. CXXV. Declinatio ad Ort. Gra. 62. Lat. 45.

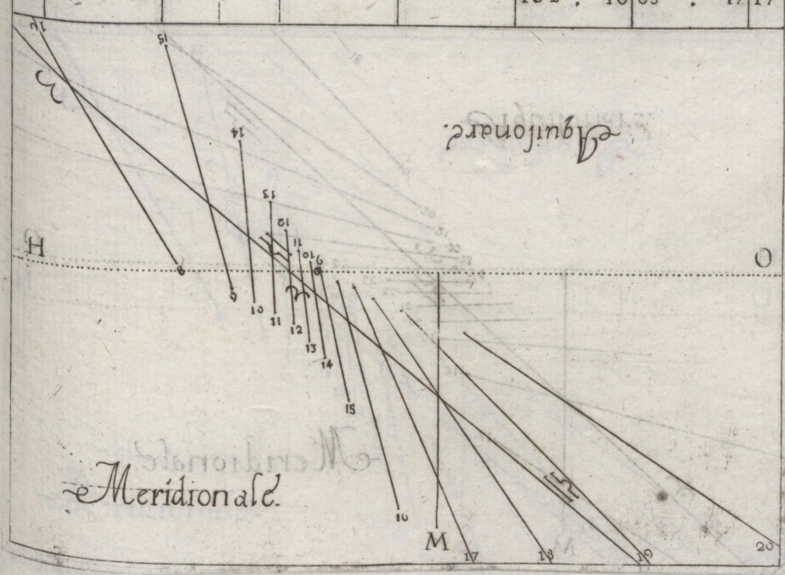
H. Merid	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	
21	289.	32	77.	31						3
20	293.	21	29.	35						4
19	295.	51	16.	45	313.	29	129.	44		5
18	297.	39	10.	19	318.	34	34.	6		6
17	297.	34	6.	6	324.	50	18.	16	336.	7
16	290.	41	2.	51	333.	29	11.	17	342.	
15	204.	53	0.	55	347.	38	7.	26	350.	
14	149.	27	3.	23	14.	57	4.	43	11.	
13	145.	12	6.	46	57.	54	4.	24	18.	
12	145.	33	11.	16	90.	0	6.	23	34.	
11	147.	28	18.	23	106.	34	10.	2	54.	
10	150.	17	33.	35	116.	13	16.	3	72.	
9	154.	9	106.	43	122.	53	28.	22	85.	
8					128.	19	76.	56	95.	
7								10	2.	
								15	71.	
									27	17.



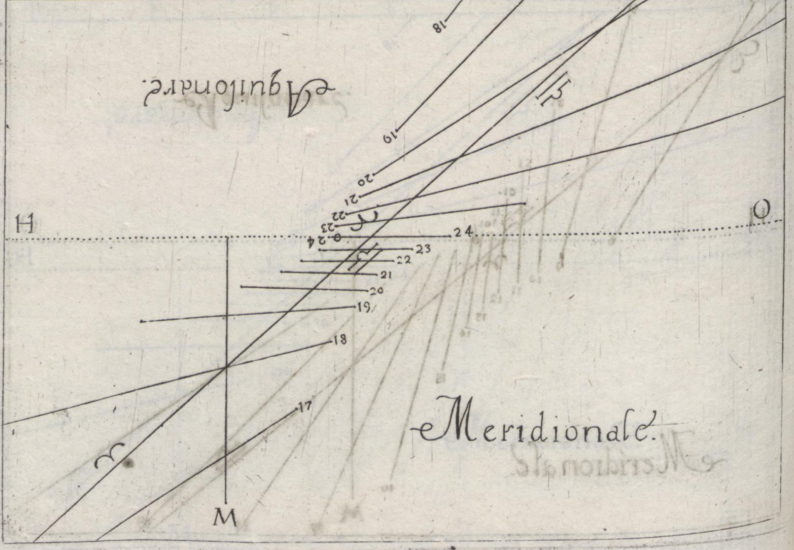
Tab. CXXVI.		Declinatio ad Occas. Gra. 62. Lat. 45.												
H Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H Aquila	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M		
16										20	51	107	16	8
17					46	31	129	44	14	14	35	48	7	6
18	72	23	220	26	41	26	34	56	5	15	21	8	6	7
19	68	17	41	8	35	10	18	16	35	2	53	14	5	5
20	65	11	21	2	26	31	11	17	33	6	23	11	5	4
21	62	5	12	43	12	22	7	26	31	6	43	11	9	3
22	62	9	7	46	34	3	4	43	20	7	24	12	20	2
23	64	52	4	11	30	3	4	24	28	1	40	15	45	1
24	90	0	1	20	27	0	6	23	27	0	22	52	52	24
25	201	48	2	8	25	26	10	2	26	1	31	40	49	23
26	213	50	5	13	24	47	16	3	25	13	16	45	45	22
27	214	47	9	7	23	7	28	22						21
28	213	31	14	46	23	41	76	56						20
29	211	3	25	10										19
30	207	39	55	49										18



Tab. CXXVII.		Declinatio ad Ort. Grd. 63. Lat. 45.												
c. 45.	cri. H. Aquil.	bra. H. Aquil.	M	H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquil.
					Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
					G.	M P.	MG.	M P.	MG.	M P.	M			
16	8	21	289	2888	4								3	
48	7	20	293	2131	1								4	
8	6	19	295	3517	18	313	18	149	43				5	
55	5	18	297	510	38	318	18	35	27				6	
57	4	17	297	396	19	324	18	18	42	336	47	4137, 53	7	
9	3	16	289	443	3	332	32	11	27	342	26	51	42	8
20	2	15	213	831	1	346	4	7	12	350	2	25	58	9
45	1	14	152	453	17	12	29	4	40	0	33	17	4	10
52	24	13	146	376	37	56	22	4	12	15	1	12	49	11
49	23	12	146	2011	4	90	0	6	7	33	38	11	4	12
45	22	11	148	1018	1	106	56	9	43	53	53	11	15	13
21	21	10	150	3832	47	116	34	15	34	71	44	13	29	14
20	20	9	154	15101	1	123	6	27	12	85	19	18	24	15
19	19	8				128	21	66	28	95	9	29	6	16
6	18	7								102	16	65	17	17



Tab. CXCVIII. Declinatio ad Occas. Gra. 63. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canceri.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
16										20.	57	113.	14. 8
17					46	32	149.	42	14.	32	36.	17.	7
18	72.	25	389.	10	41.	42	35.	27	5.	48	21.	12.	6
19	68.	24	43.	53	35.	42	18.	42	353.	41.		50	5
20	65.	26	21.	50	27.	28.	11.	27	337.	18.		48	4
21	63.	24	13.	6	13.	56	7.	12	317.	30	10.	53	3
22	62.	51	8.	2	347.	31	4.	40	297.	52	12.	0	2
23	65.	40	4.	23	303.	38	4.	12	281.	50	18.	12	1
24	90.	0	1.	32	270.	0	6.	7	270.	0	21.	50	24
25	197.	11	2.	3	253.	4	9.	43	261.	29	38.	31	23
26	211.	57	5.	5	243.	26	15.	34	255.	13	141.	26	22
27	213.	48	8.	55	236.	54	27.	12					21
28	212.	50	14.	30	231.	39	66.	28			Alt. Pos.		20
29	210.	36	24.	37							P. M.		19
30	207.	27	53.	52							35.	27	18

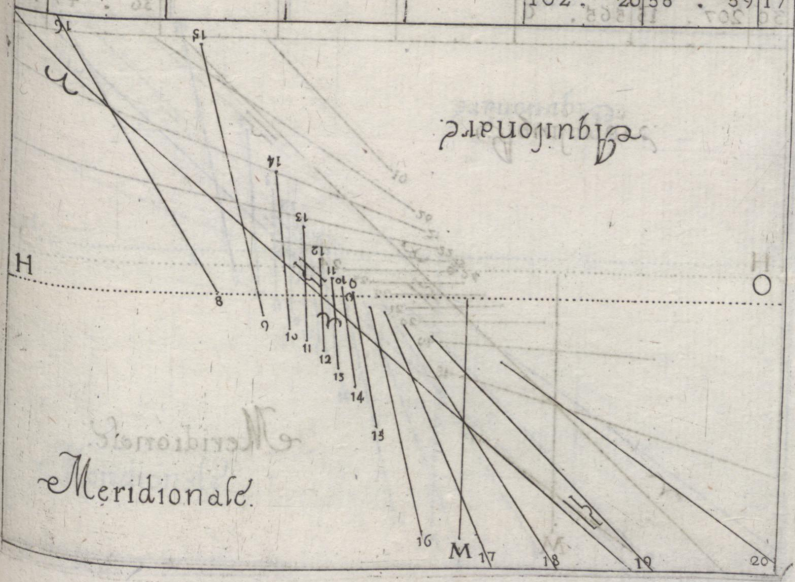


45.

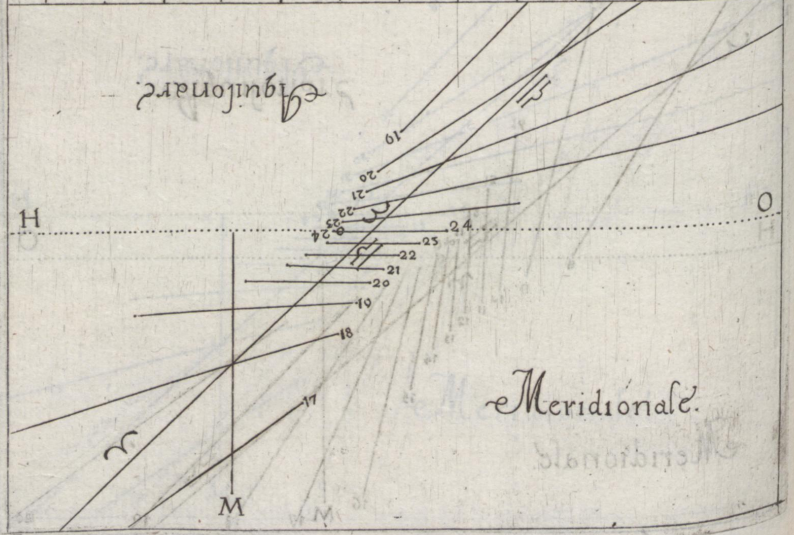
ancri.	H. Aquil.
mbra.	M
14	8
17	7
12	6
50	5
48	4
53	3
0	2
12	1
50	24
31	23
26	22
21	21
20	20
10	19
27	18

Tab. CXXVIII. Declinatio ad Ort. Gra. 63. Lat. 45.

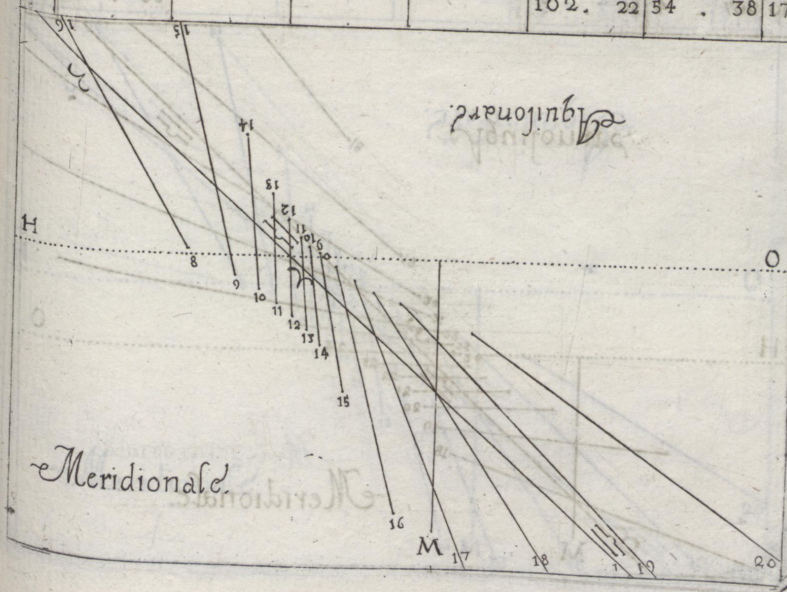
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Merid.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G . M P . M	G . M P . M	G . M P . M	G . M P . M	G . M P . M	G . M P . M	G . M P . M	
21	289 .	26 96 .	56				3
20	292 .	52 32 .	32				4
19	295 .	18 17 .	54	313 .	27 179 .	6	5
18	296 .	33 10 .	59	318 .	2 36 .	47	6
17	295 .	49 6 .	34	323 .	46 19 .	6 336 .	7
16	288 .	35 3 .	15	331 .	36 11 .	38 342 .	8
15	222 .	9 1 .	9	344 .	26 7 .	17 349 .	9
14	155 .	53 3 .	11	9 .	57 4 .	37 359 .	10
13	148 .	9 6 .	28	54 .	52 4 .	1 14 .	11
12	147 .	20 10 .	50	90 .	0 5 .	51 32 .	12
11	148 .	42 17 .	42	107 .	17 9 .	23 53 .	13
10	150 .	57 31 .	54	116 .	54 13 .	3 71 .	14
9	154 .	22 94 .	7	123 .	22 26 .	12 85 .	15
8				128 .	30 65 .	17 95 .	16
7						102 .	17
						20 58 .	



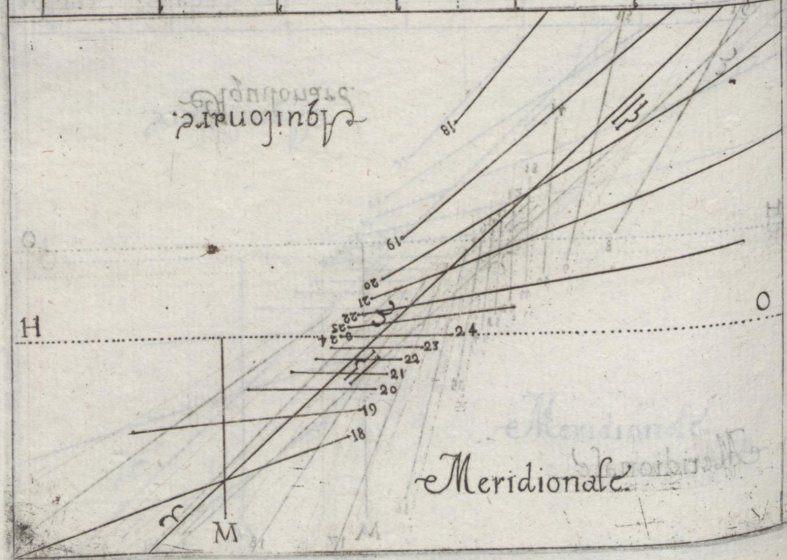
Tab. XXXX.		Declinatio ad Occas. Gra 64 Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.		
16										21	3	120	35	8
17				46	33	179		6	14		53	36	49	7
18	72	23	51	46	41	58	36	47	6		22	21	19	6
19	68	30	46	44	36	14	19	6	354		29	14	47	5
20	65	38	22	40	28	24	11	38	338		16	11	38	4
21	63	49	13	32	15	34	7	17	318		14	10	38	3
22	63	29	8	18	350	3	4	37	298		20	11	35	2
23	66	57	4	37	305	8	4	1	281		59	14	40	1
24	90	0	1	45	270	0	5	51	270		0	21	3	24
25	191	12	2	0	252	43	9	23	261		25	36	9	23
26	209	58	4	57	243	6	13	3	255		11	113	35	22
27	212	42	8	45	236	38	26		12					21
28	212	9	14	13	231	30	65		17					20
29	210	14	24	3										19
30	207	15	565	6										18
														</



45.		Tab. cxxxI. Declinatio ad Ort. Gra. 65. Lat. 45.											
H. Merid.	H. Aquil.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquil.		
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.			
		C.	M	P.	M	G.	M	P.	M	G.	M	P.	M
35	8	289	23	117	8								
40	7	292	44	34	16								3
19	6	295	2	18	34	313	26	254	61				4
47	5	296	8	11	19	317	50	38	25				5
38	4	295	3	6	50	323	16	19	34				6
38	3	287	23	31	29	330	42	11	50	342	0	54	26
33	2	229	52	18	8	342	51	27	22	349	8	26	28
40	1	159	38	5	27	7	25	4	34	359	9	17	4
3	24	140	49	6	20	52	57	3	40	13	12	12	37
9	23	148	14	10	37	90	0	5	36	31	46	10	38
33	22	140	9	17	19	107	41	9	4	52	33	10	38
21		151	17	31	6	117	14	14	34	71	9	12	36
Pol. 20		154	27	88	56	123	36	28	12	85	13	17	14
M 19						128	36	60	25	95	14	26	27
47	18									102	22	54	38



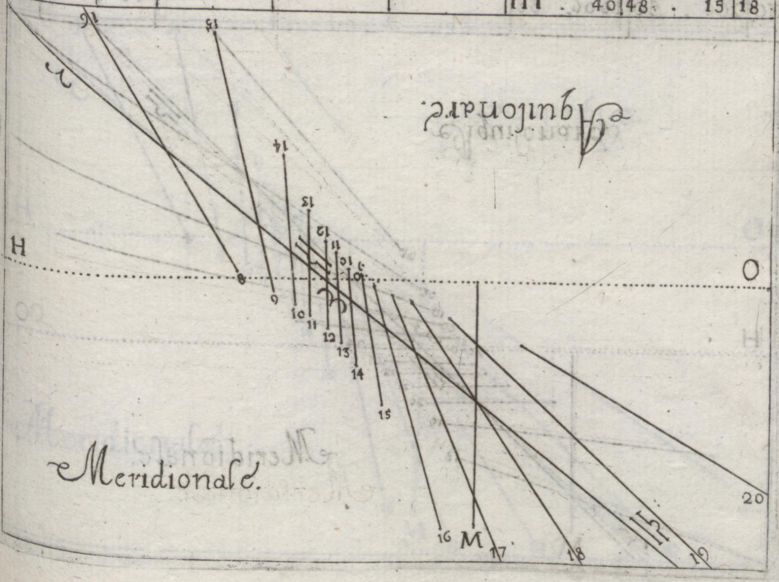
Declinatio ad Occas. Gra 65. lat. 45.									
Tropic. Capric.		Aequinoctialis		Tropic. Cancr.					
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
G.	MP.	MG.	MP.	MG.	MP.	M			
16					21	19	129	20	8
17			46	34	254	1	15	10	37
18	72	27	Infinita	42	10	38	25	6	56
19	65	34	50	19	36	44	19	34	355
20	65	51	23	35	29	18	11	50	339
21	64	11	13	58	17	9	74	22	319
22	64	7	8	35	352	35	42	34	298
23	67	44	4	50	307	3	32	49	282
24	90	0	1	58	270	0	52	36	270
25	185	28	1	58	252	19	9	4	261
26	207	44	4	50	242	46	14	34	255
27	211	26	8	34	236	24	25	10	99
28	211	27	13	58	231	24	50	825	28
29	209	46	23	31	225	00	50	821	88
30	207	4	50	53					



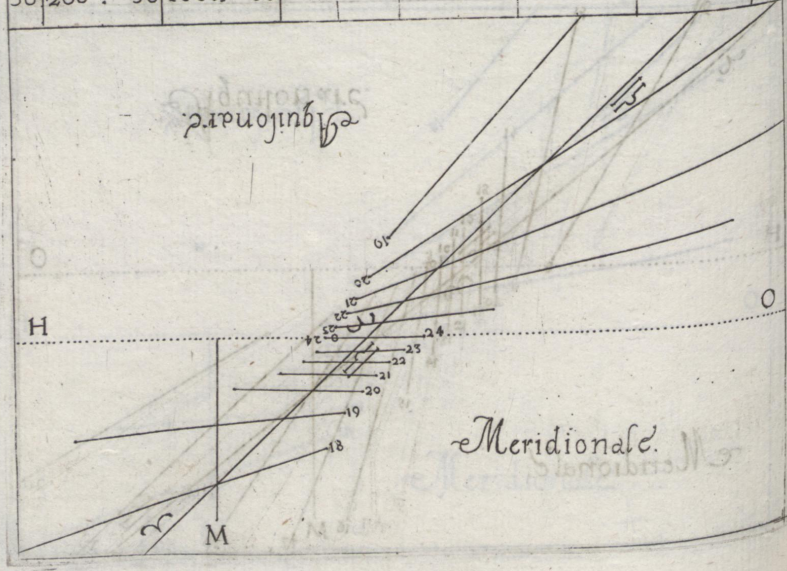
Tab.
CXXXIII.

Declinatio ad Ort. Gra. 66. Lat. 45.

H Merid.	Tropic. Capric.			Equinoctialis.			Tropic. Cancr.			H Aquilo			
	Arcus.	Vmbra		Arcus.	Vmbra		Arcus.	Vmbra					
	G.	M	P	MG	M	P	MG	M	P	M			
21	289	23	134	54									
20	292	36	36	4						3			
19	294	46	19	41	313	13	292	26		4			
18	295	39	11	41	317	37	40	0		5			
17	294	17	7	0	5	322	48	20		6			
										7			
16	286	12	3	42	329	51	12	3	341	47	55	54	8
15	235	50	1	28	341	18	7	28	348	42	26	42	9
14	163	14	3	2	4	43	4	33	358	26	17	6	10
13	151	27	6	12	50	56	3	39	12	16	12	31	11
12	149	15	10	26	90	0	5	21	30	47	10	27	12
11	149	46	16	59	108	4	8	46	51	51	10	20	13
10	151	37	30	19	117	38	14	7	70	49	12	12	14
9	154	36	83	48	123	54	24	18	85	8	16	27	15
8					128	45	56	27	95	15	25	14	16
7									102	25	49	32	17
6									111	40	48	15	18

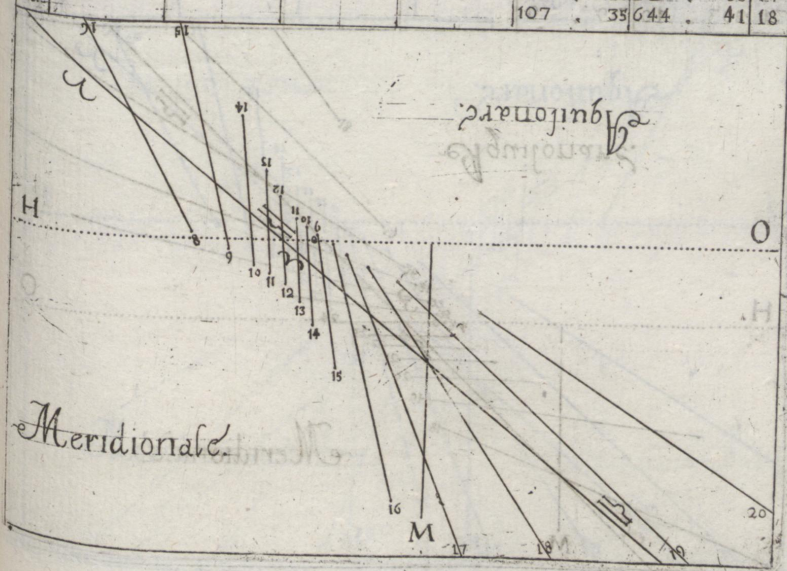


Tab. cxxxiv.		Declinatio ad Occas. Gra. 66. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
16									21	13	138	34	8
17					46	47	292	26	15	29	38	4	7
18					42	23	40	0	7	29	21	32	6
19	203	12	982	43	37	12	20	1	356	6	14	43	5
20	66	2	24	32	30	1	9	12	3	340	13	11	22
21	64	33	14	26	18	42	7	28	320	6	10	10	3
22	65	44	8	53	355	17	4	33	299	24	10	54	2
23	68	42	5	4	309	4	3	39	282	21	13	41	1
24	90	0	2	11	270	0	5	21	270	0	19	27	24
25	179	8	1	58	251	56	8	46	261	20	32	23	23
26	205	29	4	43	242	22	14	7	255	8	85	54	22
27	210	12	8	28	236	6	24	18					21
28	210	37	13	42	231	15	56	27					20
29	209	2	23	1									19
30	206	50	1006	38									18

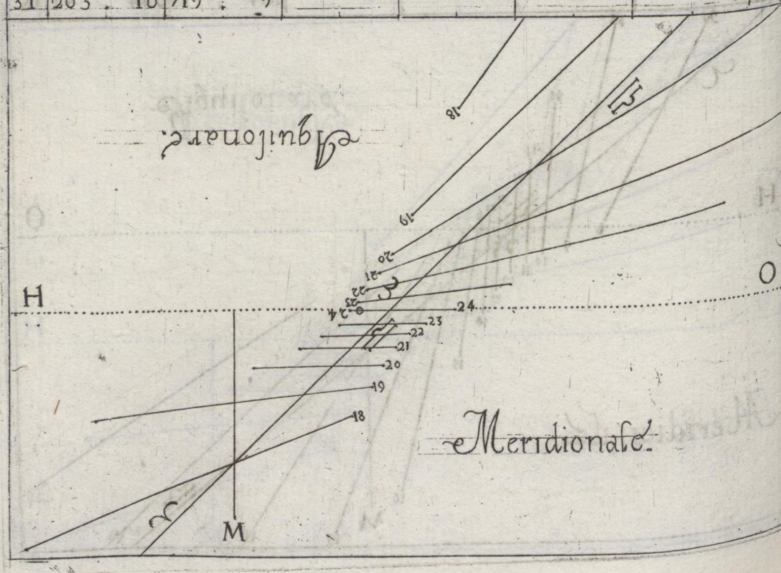


Declinatio ad Ort. Gra. 67. Lat. 45.

Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.	
Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra
G.	M	P.	MG.	M	P.
M	P.	M	P.	M	P.
21 289	20 176	21			
20 292	27 38	11			
19 294	30 19	53 313	28 420	53	
18 295	13 12	3 317	22 41	43	
17 293	36 7	20 322	21 20	30	
16 285	29 3	155 329	0 12	16 341	36 57
15 239	26 1	40 339	49 7	33 348	13 26
14 167	12 3	0 2	6 4	32 357	44 17
13 151	26 6	0 5 48	42 3	28 11	19 12
12 150	15 10	15 20	0 5	16 29	47 16
11 150	22 16	41 108	35 8	27 51	6 10
10 152	0 29	37 118	2 13	33 70	29 11
9 154	4 5 79	52 124	11 23	27 85	5 18
8		128	54 52	58 95	18 24
7				102	28 46
6				107	35 644
					41 18

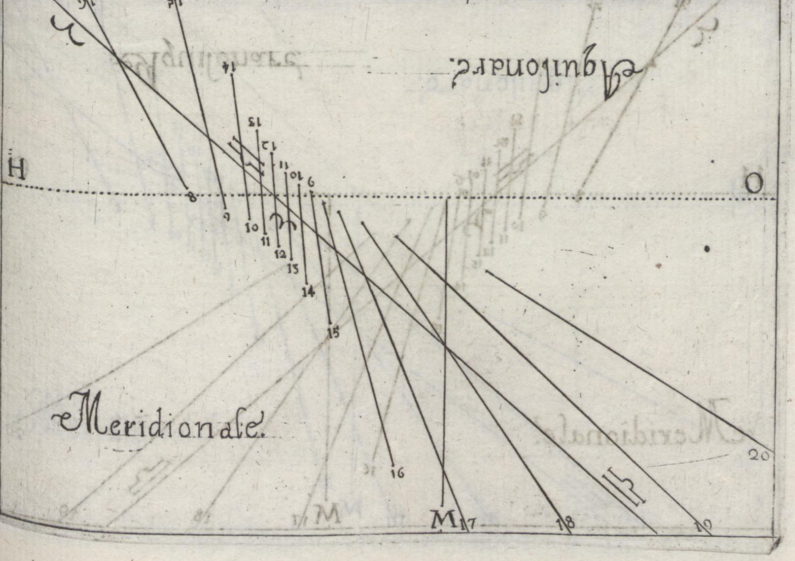


Tab. CXXXVI		Declinatio ad Occas. Gra. 67. Lat. 45.											
H. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Merid.		H. Merid.				
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G.	M. P.	MG.	M. P.	MG.	M. P.					M.		
16							21	17	150	15	8		
17			46	42	420	53	15	46	38	40	7		
18			42	38	41	45	8	2	21	38	6		
19	68	45	58	45	37	39	20	31	356	58	14	5	
20	66	15	25	34	31	0	12	16	341	16	11	4	
21	64	54	14	54	20	11	7	33	321	0	9	3	
22	65	15	9	10	357	54	4	32	399	56	10	2	
23	69	28	5	18	311	18	3	28	282	32	13	1	
24	90	0	2	25	270	0	5	6	270	0	18	24	
25	133	20	1	58	251	25	8	27	261	16	30	23	
26	203	12	4	32	241	58	13	33	255	6	77	54	22
27	209	0	8	16	235	49	23	27					21
28	209	56	13	28	231	6	52	58					20
29	208	51	22	38									19
30	206	38	46	47									18
31	203	10	719	9									17

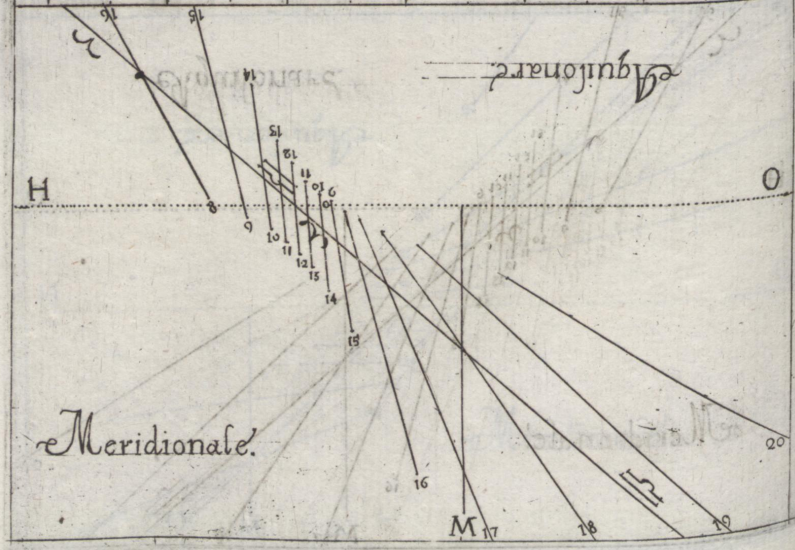


Tab. CXXXVII. Declinatio ad Orr. Gra. 68. Lat. 45.

Tropie Capric.		Equinoctialis				Tropie Cancr.		
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	H. Aquila
G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M
21	289.	19	218.	4.				3
20	292.	20	40.	18.				4
19	294.	16	20.	36	313.	13	750.	22
18	294.	47	12.	27	317.	9	43.	40
17	293.	2	7.	36	321.	50	21.	1
16	284.	39	4.	9	328.	10	12.	29
15	243.	4	1.	50	338.	21	7.	40
14	171.	00	2.	55	359.	27	4.	832
13	155.	80	5.	58	46.	25	3.	18
12	151.	916	10.	105	90.	0	4.	151
11	150.	59	16.	23	108.	59	8.	140
10	152.	20	28.	57	118.	27	13.	17
9	154.	53	75.	54	124.	27	22.	39
8				129.	2	49.	51	95
7								102
6								107



Tab. Declinatio ad Occas. Gra. 68. Lat. 45.													
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			M. Aquil.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M.	P.	M.	G.	M.	P.	M.	G.		M.	P.	
16								21	23	162	8.8		
17				46	47	750	22	16	6	39	17.7		
18				42	51	43	40	8	35	21	46.6		
19	68	49	63	31	38	10	21	11	357	45	14	39.5	
20	66	25	26	38	31	50	12	29	342	13	11	6.4	
21	65	13	15	23	21	39	7	40	321	57	9	43.3	
22	65	45	9	28	0	33	4	32	300	33	10	15.2	
23	70	15	5	32	313	35	3	18	282	45	12	48.1	
24	90	0	2	37	270	0	4	51	270	0	18	1.24	
25	167	28	2	80	251	1	8	10	261	13	29	16.23	
26	200	52	4	32	241	33	13	8	17	255	4	68	53.22
27	207	47	8	07	235	33	22	8	59	82	80	21	
28	209	13	13	13	230	58	49	51	48	25	12	20	
29	208	24	22	8									
30	206	23	45	12									
31	203	10	463	31									



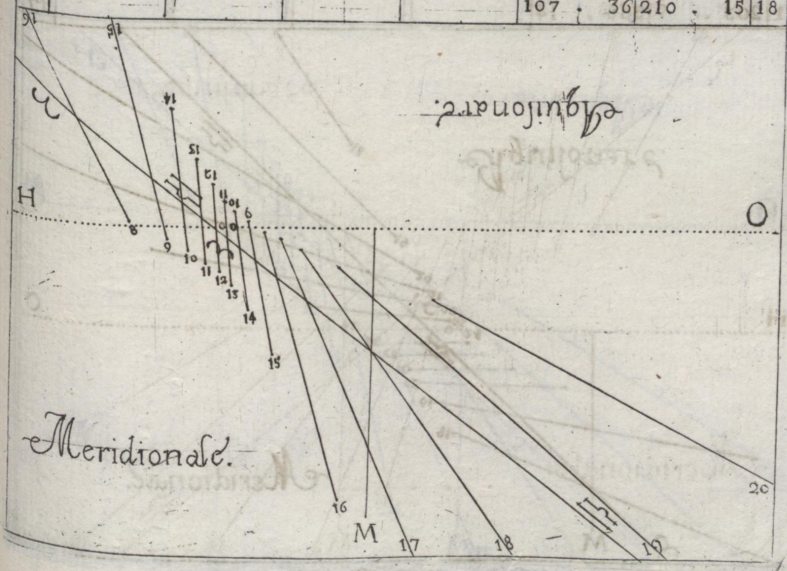
45.

icri.	M. Aquil.
ibra.	M.
8.8	
17.7	
46.6	
39.5	
6.4	
43.3	
15.2	
48.1	
1.24	
16.23	
53.22	
21	
20	
9	
M. 19	
40.18	
17	

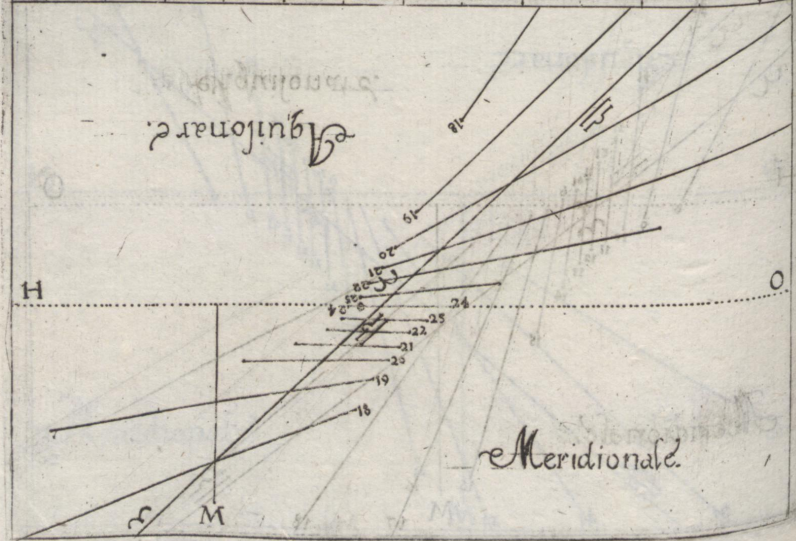
Tab.
cxxxix.

Declinatio ad Ort. Gra. 69. Lat. 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancer.			H. Aquilo			
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.					
	G	M	P	MG	M	P	MG	M	P	M			
21	289	17	361	48						3			
20	292	14	43	0						4			
19	294	1	21	24	313	22	3761	43		5			
18	294	24	12	15	316	58	43	48		6			
17	292	23	7	52	321	26	21	33		7			
16	283	59	4	49	327	22	12	43	341	12	60	48	8
15	245	36	2	2	336	54	7	47	347	23	27	28	9
14	175	11	2	55	356	48	4	32	356	21	17	10	10
13	156	52	5	51	43	39	3	9	9	24	12	17	11
12	152	19	9	55	90	0	4	30	27	43	9	55	12
11	151	38	16	6	109	32	7	52	49	32	9	31	13
10	152	42	28	17	118	52	12	53	69	46	11	5	14
9	155	2	72	30	124	46	21	53	84	57	14	46	15
8					129	14	47	5	95	24	22	12	16
7									102	38	41	1	17
6									107	36	210	15	18

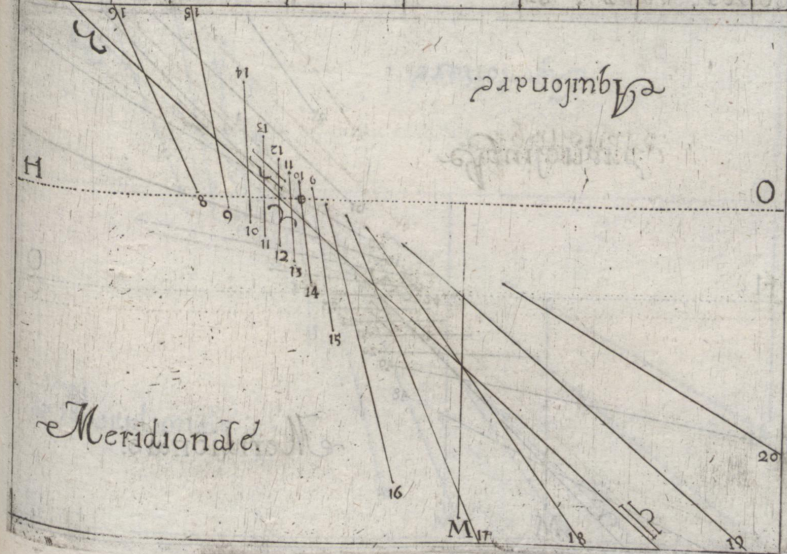


Tab. cxxxx.		Declinatio ad Occas. Gra. 69. Lat. 45.												
H Merid	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H Aquila	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G	M P	M G	M P	M G	M P	M G	M P	M G	M P	M G	M P		
16														
17					46	38	4137.	53	16		23	40		0 7
18					43	4	45	48	9		8	21		54 6
19	68	53	368	14	38	34	21	34	358	34	14		38	5
20	66	36	27	50	32	40	12	43	343	16	10		59	4
21														
22	65	32	15	54	23	7	7	46	322	57	9		30	3
23	66	22	9	48	7	13	4	33	300	48	9		38	2
24	71	51	5	47	316	47	3	8	282	58	12		21	1
25	90	0	2	51	270	0	4	36	270	0	17		20	24
26	161	37	2	4	250	29	7	52	261	8	27		50	23
27														
28	198	13	4	27	241	3	11	52	253	0	62		29	22
29	206	28	7	58	233	8	21	52						21
30	208	21	13	0	230	50	47	1						20
31	208	2	21	38										19
32	206	9	43	49										18
33	203	9	368	14										17

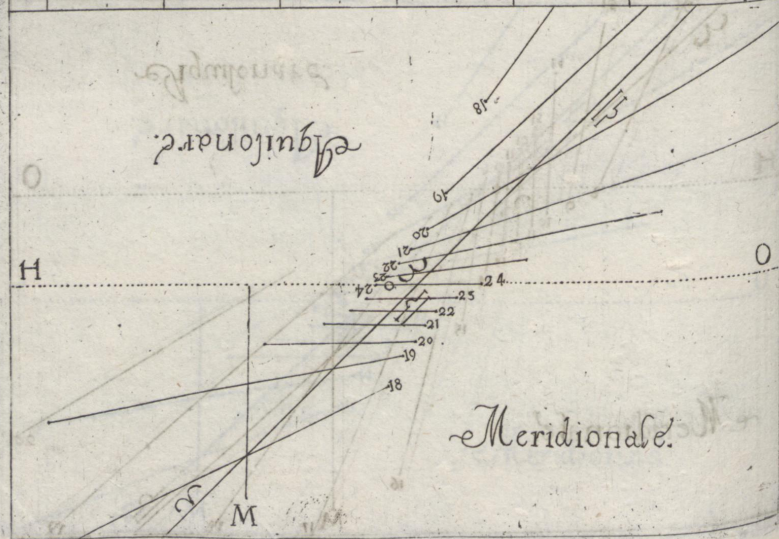


Tab. cxxxxxi. Declinatio ad Ort. Gra. 70. Lat. 45.

H. Merid.	Tropie. Capric.			Æquinoctialis.			Tropie. Cancr.			H. Aquilo
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G	M P	MG	G	M P	MG	G	M P	M	
20	292	9 45	43							4
19	293	48 22	13							5
18	293	55 13	18	316	46 48	5				6
17	291	50 8	12	320	58 22	5				7
16	285	23 4	36	326	35 12	58	341	1 62	23 8	
15	248	6 2	14	335	29 7	54	346	55 27	37 9	
14	179	20 2	54	354	15 4	33	355	39 17	12 10	
13	158	43 5	45	40	57 3	6 8		29 12	13 11	
12	154	24 9	45	90	0 4	22	26	40 9	45 12	
11	152	16 15	40	110	2 7	36	48	46 9	18 13	
10	153	5 27	40	119	20 12	30	69	26 10	45 14	
9	155	9 69	20	125	5 21	12	84	54 14	15 15	
8				129	23 44	31	95	23 21	20 16	
7				133	13	Infinita	102	40 38	39 17	
6							107	39 153	38 18	



Tab. CXXXXII		Declinatio ad Occas. Gra. 70. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	MG.	G.	M	P.	MG.	G.	M	P.	M	
16									21	30	195	1	8
17									16	40	40	49	7
18					43	14	48	5	10	3	21	30	6
19	68	58	77	3	39	2	22	07	359	25	14	38	5
20	66	45	29	3	33	25	12	58	344	20	10	53	4
21	63	39	16	9	24	31	7	54	323	59	9	18	3
22	60	47	10	6	5	45	4	33	301	46	9	39	2
23	71	38	6	1	314	3	3	0	383	10	11	57	1
24	90	0	3	4	270	0	4	22	269	53	16	41	24
25	136	24	2	9	240	58	7	36	261	4	26	35	23
26	195	45	4	23	240	40	12	30	255	2	57	25	22
27	205	1	7	53	234	55	21	11					21
28	207	32	12	49	230	37	44	31					20
29	207	27	21	19									19
30	205	57	42	32									18

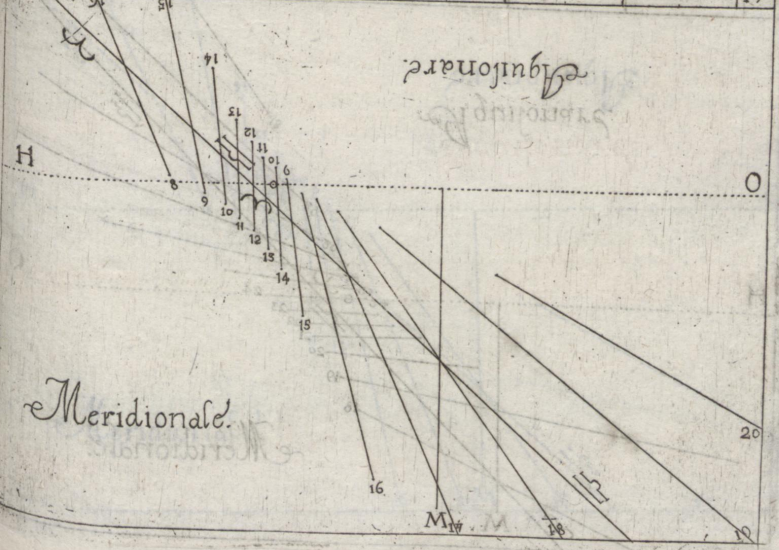


45.
cri. H. Aquil.
bra. M
1 8
49 7
36 6
38 5
53 4

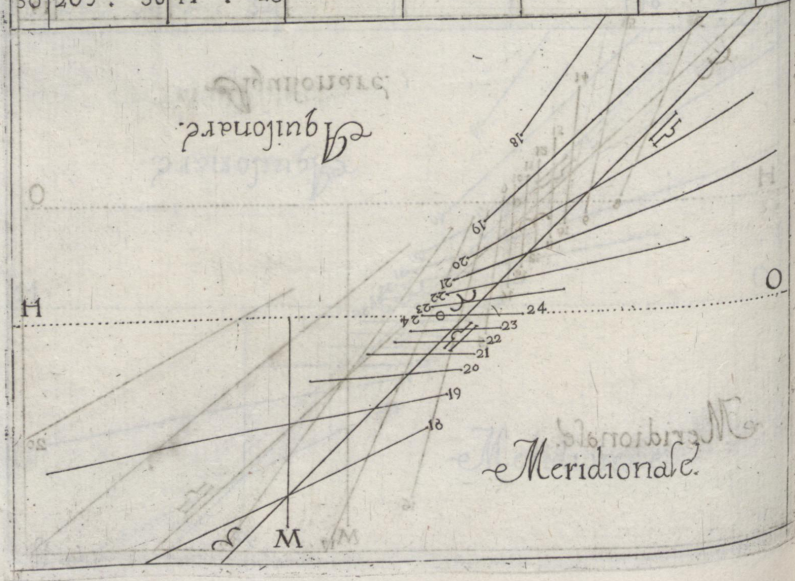
18 3
39 2
57 1
41 24
35 23

25 22
21
Pol. 20
M 19
8 18

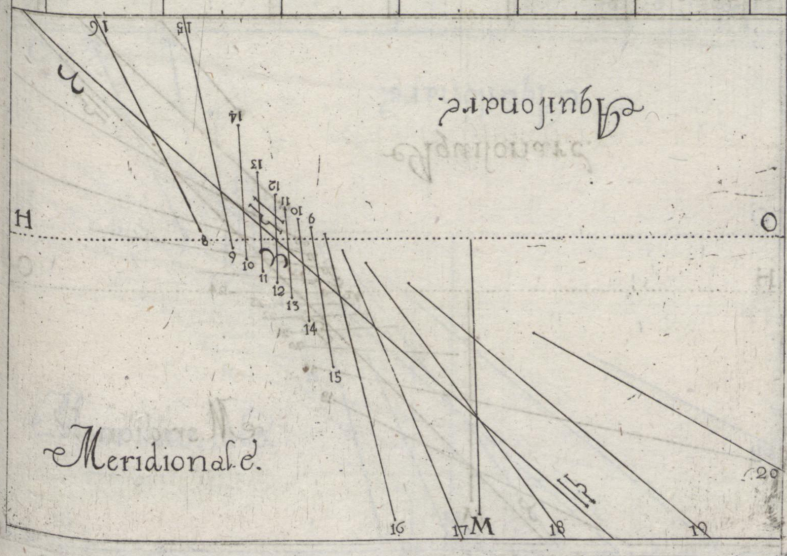
Tab. Declinatio ad Ort. Gra. 71. Lat. 45.											
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo				
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.					
G.	M	P.	M	P.	M	P.	M				
20	292	3	49	8							
19	293	33	23	7							
18	293	40	13		42	316	36	51	85		
17	291	49	8		26	320	38	23	0		
16	282	49	4		50	328	45	13	21	340	50
										64	37
											8
15	249	47	2		26	334	10	8	2	346	33
14	183	28	2		84	351	34	4	38	354	57
13	160	44	5		40	37	32	2	51	7	27
12	154	44	9		36	90	0	4	8	28	30
11	152	59	13		34	110	34	7	19	47	49
											9
											2
											13
10	153	29	27	5	119	50	12	70	68	58	10
9	155	21	66	25	125	24	20	14	84	48	13
8					129	36	41	24	95	31	20
7					133	13	438	45	102	44	36
6									107	38	130
											36
											18
											19



Tab. CXXXIV		Declinatio ad Occas. Gra. 71. Lat. 45.										
H. Merid.	Tropie Capric.			Aequinoctialis.			Tropie Cancr.			H. Aquile		
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	H. Aquile		
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	
16									21	33	222	48. 8
17									16	56	41	29. 7
18				43	24	51	55	10	12	22	13. 6	
19	69	0	87	54	39	25	23	0	0	12	14	38. 5
20	66	55	30	32	34	18	13	21	34	8	24	10. 4
21	66	9	17	0	28	50	8	2	32	5	3	6. 3
22	67	13	16	27	8	26	4	35	30	2	27	2. 2
23	72	9	6	16	32	2	28	51	38	3	25	1. 1
24	70	0	3	17	27	0	4	8	27	0	16	7. 24
25	151	33	2	15	24	9	26	7	19	26	0	23. 23
26	193	0	4	19	24	0	10	12	7	25	4	53. 10. 22
27	203	39	7	44	23	4	36	20	14	32	3	21. 21
28	206	46	12	36	23	0	24	41	24			Alt. Pol. 20
29	206	57	20	55								P. M. 19
30	205	36	41	23								51. 55. 18

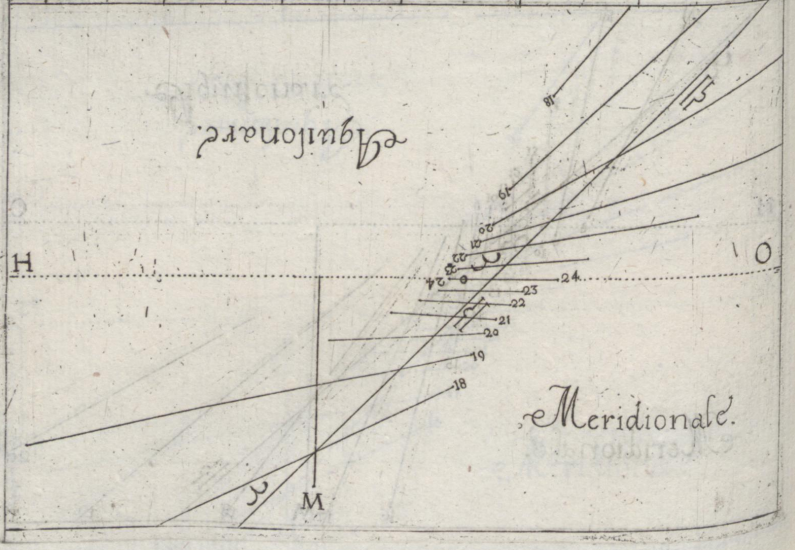


45.		Tab. cxxxv. Declinatio ad Orc. Gra. 72. Lat. 45.												H. Aquil.	
Cri.	H. Aquil.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
bra.		G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
M.		20	291.	58	52	36								4	
48. 8		19	293.	23	24	2								5	
29. 7		18	293.	19	14	9	316.	27	53	37				6	
13. 6		17	290.	46	8	45	320.	11	23	21				7	
38. 5		16	282.	18	5	5	325.	1	13	29	340.	40	66	42	8
47. 4															
6. 3		15	251.	28	2	39	332.	49	8	10	346.	8	28	23	9
22. 2		14	189.	37	2	55	349.	1	4	38	354.	16	17	20	10
33. 1		13	162.	43	5	35	34	11	2	43	6	29	12	6	11
7. 24		12	155.	40	9	27	90	0	3	54	24	21	9	27	12
27. 23		11	153.	39	15	18	111.	8	7	3	47.	1	8	28	13
10. 22		10	153.	54	26	32	120.	19	11	41	68.	33	10	1	14
21		9	155.	30	63	37	125.	45	19	40	84.	43	13	17	15
Dol. 20		8					129.	36	40	10	95.	35	19	38	16
M. 19		7					133.	14	340.	48	102.	49	34	14	17
55. 18		6									107.	42	106.	43	18



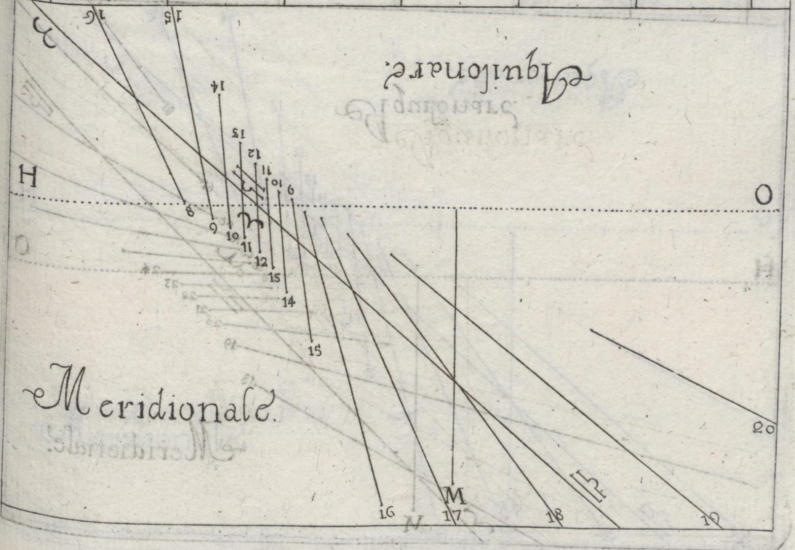
Tab. CXXXXXVI Declinatio ad Occas. Gra. 72. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G	MP	MG	MP	MG	MP	M	
17					17	12 42	22 7
18			43	33 53	37 10	43 22	24 6
19	69	3 28	41 39	49 23	21 1	1 14	38 5
20	67	4 31	59 34	59 13	29 346	29 10	42 4
21	66	26 17	35 27	11 8	10 326	8 8	55 3
22	67	41 10	48 10	59 4	38 303	9 9	5 2
23	72	45 6	31 325	49 2	43 283	39 11	9 1
24	90	0 3	31 270	0 3	54 270	0 15	29 24
25	146	50 2	21 248	52 7	3 260	55 24	18 23
26	190	17 4	16 239	41 11	41 254	49 48	59 22
27	202	13 7	36 234	13 19	49		21
28	205	52 12	23 230	19 40	10		20
29	206	20 20	31 226	43 340	48		19
30	205	22 40	12				18
31	203	1 225	15				17
						Alt. Dol.	
						P. M.	
						53°	37 17



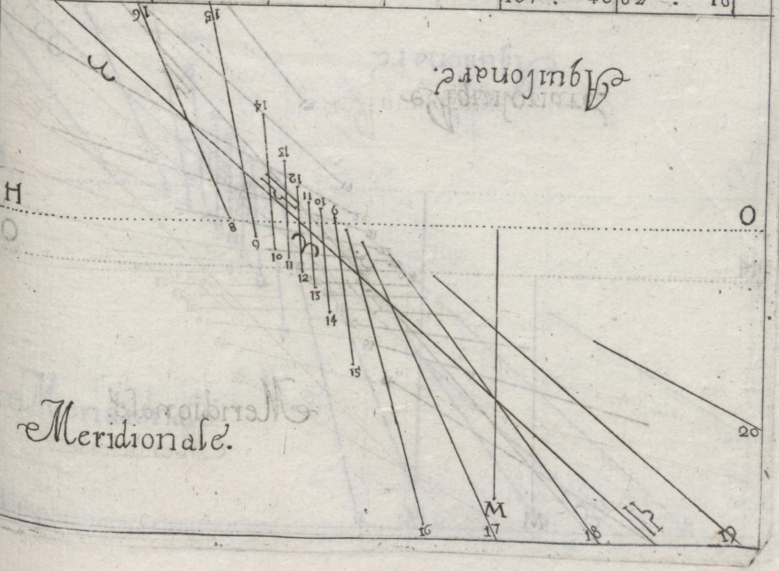
45.	H. Aquil.
cri.	
mbra.	
M.	
22 7	
24 6	
38 5	
42 4	
55 3	
5 2	
9 1	
29 24	
18 23	
59 22	
21	
20	
Do.	
19	
M.	
18	
37 17	

Declinatio ad Ort. Gra. 73. Lat. 45.									
Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.					
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
G.	M	P.	MG.	M	P.	MG.	M	P.	M
20	291.	53 57	10						4
19	293.	10 25	3						5
18	293.	0 14	37 316	17 56	32				6
17	290.	22 9	2 319	48 23	57				7
16	281.	50 5	19 324	21 13	45 340	30 69			8
15	252.	43 2	51 331	29 8	18 345	44 28	43 9		
14	191.	34 2	57 346	29 4	41 353	34 17	24 10		
13	164.	47 5	33 30	13 2	36 5	29 12	3 11		
12	156.	51 9	18 90	0 3	40 23	10 9	18 12		
11	154.	24 13	5 111	48 6	48 45	57 8	35 13		
10	154.	18 26	0 120	55 11	24 68	6 9	41 14		
9	155.	41 61	18 126	5 19	14 84	38 12	50 15		
8			129.	37 38	25 93	38 18	55 16		
7			133.	15 256	4 102	53 32	28 17		
6					107.	43 94	32 18		

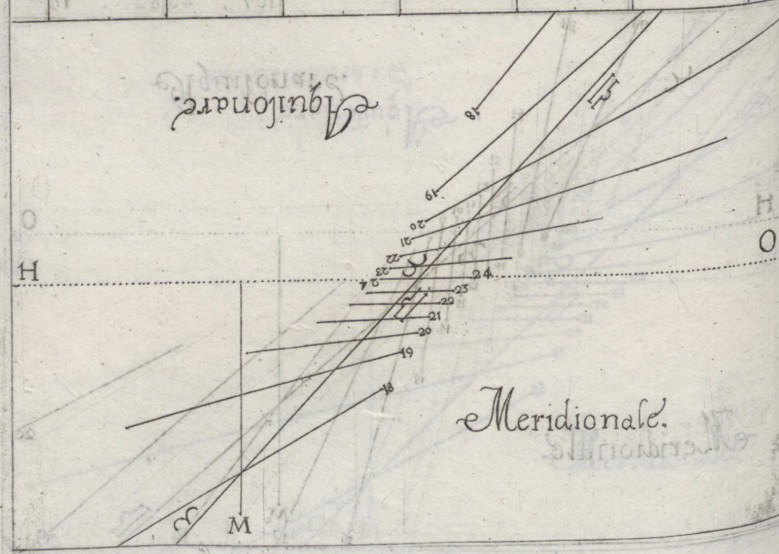


45	
cri.	H. Aquila
bra.	
M	
14 7	
34 6	
39 5	
36 4	
18 43 5	
48 2	
46 1	
0 24	
19 23	
51 22	
21	
20	
Pol	
M	
18	
32 17	

Tab. cxxxxix. Declinatio ad Ort. Gra. 74. Lat. 45.									
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo		
	Arcus.		Vmbra.		Arcus.			Vmbra.	
	G.	M P.	MG.	M P.	MG.	M P.		M	
20	291 .	48 61 .	44						4
19	293 .	1 26 .	4						5
18	292 .	40 15 .	7 316 .	6 60 .	20				6
17	289 .	50 9 .	22 319 .	26 24 .	42				7
									8
16	281 .	19 5 .	34 323 .	41 14 .	3 340 .	20 71 .	27 9		
15	283 .	52 3 .	4 330 .	23 8 .	27 345 .	2 29 .	5 10		
14	195 .	31 3 .	0 344 .	1 4 .	45 352 .	54 17 .	29 11		
13	166 .	57 5 .	28 26 .	16 2 .	30 4 .	30 12 .	1 12		
12	154 .	4 9 .	12 90 .	9 3 .	26 22 .	0 9 .	11 13		
11	155 .	5 14 .	51 112 .	28 6 .	33 45 .	0 8 .	19 14		
10	154 .	43 25 .	30 121 .	24 11 .	4 67 .	39 9 .	22 15		
9	153 .	53 59 .	20 126 .	28 18 .	37 84 .	33 12 .	23 16		
8			130 .	8 36 .	34 95 .	45 18 .	9 17		
7			133 .	5 198 .	7 102 .	58 30 .	52 18		
6					107 .	46 82 .	16		

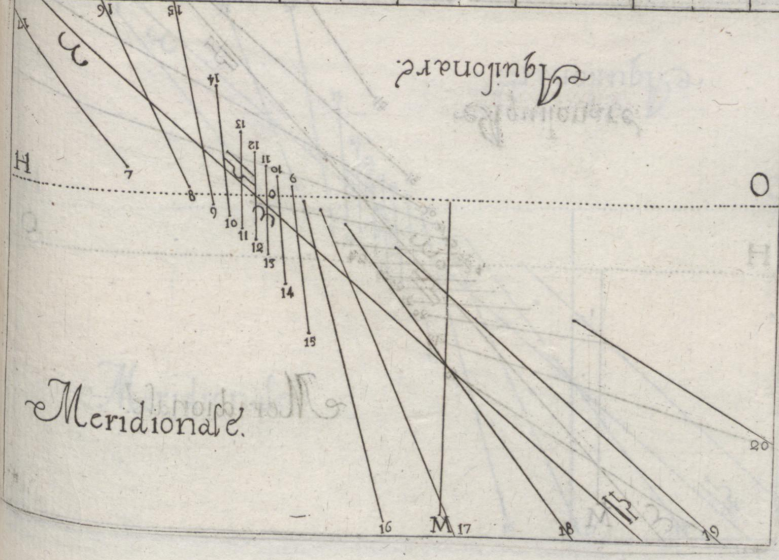


Tab. Declinatio ad Occas. Gra. 74, Lat. 48.										
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G.	M/P	M/G	G.	M/P	M/G	G.	M/P	M	
17							17	45	44	4
18				43	54	60	20	11	46	22
19	69	7	135	21	40	34	24	42	2	40
20	67	23	35	25	36	21	4	348	41	10
21	66	58	18	52	29	47	8	27	328	26
22	68	30	11	31	15	59	4	45	304	39
23	73	49	7	33	33	43	2	30	348	12
24	90	0	3	59	270	0	3	26	270	0
25	139	13	2	37	247	32	6	33	260	45
26	184	38	4	13	236	36	11	4	254	42
27	199	11	7	24	233	32	18	37	250	42
28	204	12	12	1	229	52	36	34		
29	205	20	19	50	226	55	198	35		
30	204	47	38	13						
31	202	55	179	6						
									Ar. Pol.	19
									P. M.	18
									60	20

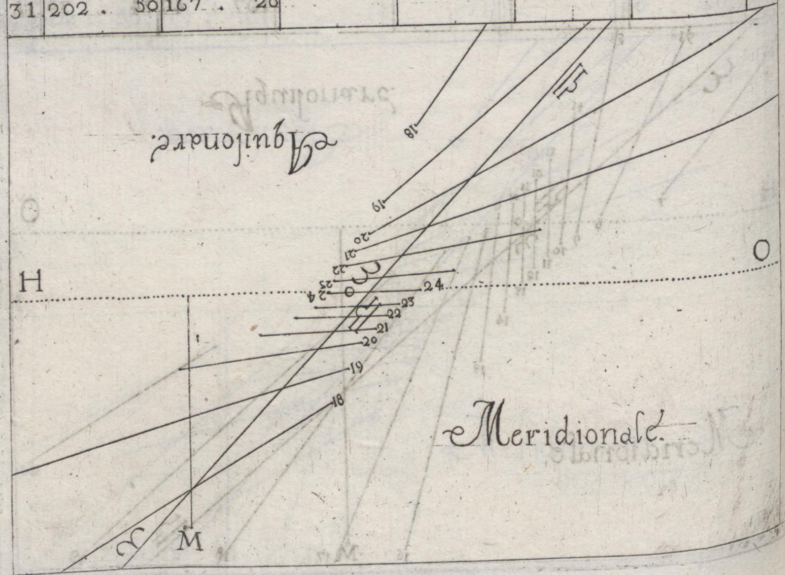


45.
cri.
bra.
H
M
4 7
46 6
40 5
32 4
35 3
33 2
26 1
28 24
20 23
44 22
37 21
20
20 19
M
18
20 17

Tab. CLII		Declinatio ad Ort. Gra. 75. Lat. 45.									
H _{Merid}	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H _{Merid}	
	Arcus	Vmbra.		Arcus	Vmbra.		Arcus.	Vmbra.			
	G	M P	M G	M P	M G		M P	M			
20	291	44 67	58							4	
19	292	49 27	13							5	
18	292	23 15	36 316	0 64	14					6	
17	289	27 9	40 319	3 25	32					7	
16	280	56 5	49 322	58 14	21 340	11 74		6 8		8	
15	254	52 3	50 17 329	3 8	86 344	56 29	28 9				
14	299	6 3	58 5 341	40 4	84 352	14 17	34 10				
13	169	6 5	55 22	44 2	83 3	33 11	59 11				
12	159	15 9	59 0	0 3	83 20	46 9	4 12				
11	155	50 14	59 113	14 6	84 44	0 8	15 13				
10	155	9 25	2 122	2 10	46 67	8 9	6 14				
9	156	4 57	3 126	51 18	4 84	32 11	59 13				
8			130	19 35	3 95	47 17	33 16				
7			133	19 165	24 103	4 29	29 17				
6					107	49 74	34 18				



Tab. CLII.		Declinatio. ad Occas. Gra. 75. Lat. 45.										H. Agulo	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				
	Arcus.		Vmbra		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	MG.	M P.	MG.	M P.	MG.	M P.	M				
17	.			44	0 64	14 12	0 45	3 7					
18	.					16 22		57 6					
19	69	9 164	4 40	57 25	32 3	28 14		41 5					
20	67	29 37	26 37	1 14	20 349	49 10		27 4					
21	67	12 19	32 30	56 8	36 329	38 8		23 3					
22	68	50 11	58 18	20 4	48 305	28 8		16 2					
23	74	18 7	19 338	16 2	25 284	28 10		5 1					
24	90	0 4	12 270	0 3	13 270	0 13		59 24					
25	136	6 2	45 246	46 6	18 260	40 21		29 23					
26	181	55 4	12 237	58 10	46 254	38 40		18 22					
27	197	46 7	20 233	9 18	4 250	41 194		22 21					
28	203	6 11	53 229	41 35	3			20					
29	204	54 19	32 227	41 165	24			19					
30	204	31 37	16					18					
31	202	50 167	26					14 17					



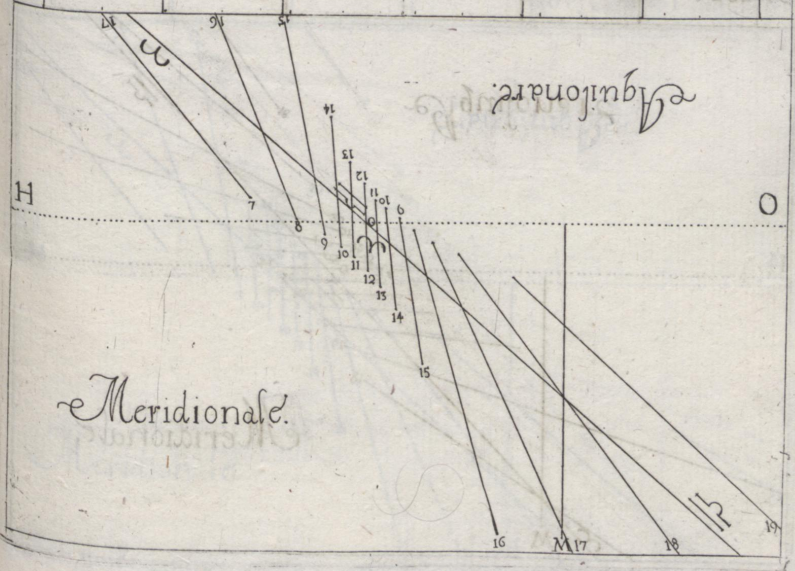
45.
acri.
bra.
M
3 7
57 6
41 5
27 4
25 3

16 2
5 1
59 24
29 23
18 22

22 21
20
Pol.
M
18
14 17

Tab. CLIII Declinatio ad Ort. Gra. 76. Lat. 45.

H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	M	P.	M	G.	M	P.	M
20	291	41	528	58			4
19	292	40	28	27			5
18	292	7	16	9	315	52	6
17	289	4	10	0	318	45	7
16	280	35	6	4	322	11	8
					340	2	
15	255	54	3	30	327	50	9
14	202	50	3	9	339	17	10
13	171	16	5	21	17	2	11
12	160	31	8	58	90	0	12
11	156	36	14	25	114	0	13
10	155	34	24	33	122	36	14
9	156	15	55	2	127	20	15
8					130	41	16
7					133	21	17
6							
5							
4							
3							
2							
1							
0							



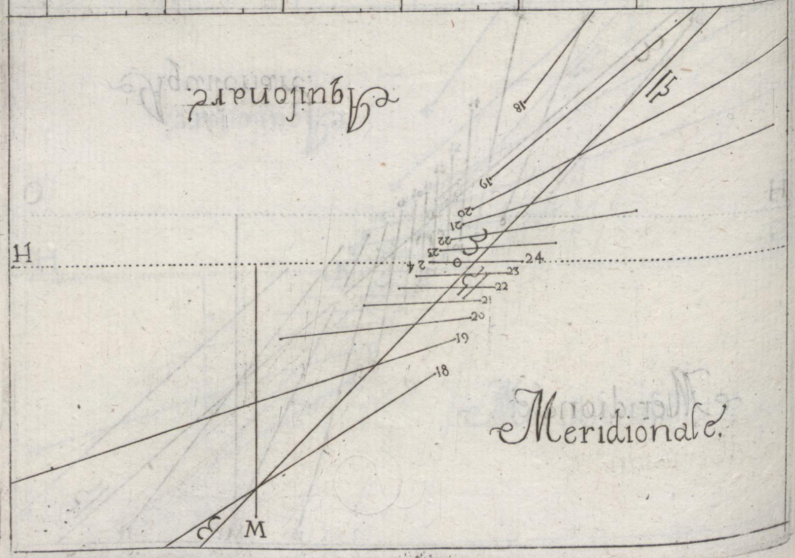
Tab. CLIV.		Declinatio ad Occas. Gra. 76. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo			
	Arcus.		Vmbra	Arcus.		Vmbra	Arcus.		Vmbra				
	G.	M	P.	M	P.	M	G.	M	P.				
17							18	18	46	4	7		
18				44	8	69	7	12	40	23	10	8	
19	69	10	213	32	41	15	26	12	4	17	14	44	5
20	67	36	39	32	37	49	14	40	380	57	10	24	4
21	67	25	20	16	32	10	8	47	330	54	8	16	3
22	69	13	12	18	20	43	4	54	306	21	8	2	2
23	74	40	7	36	342	54	2	20	284	47	9	44	1
24	19	0	4	26	270	0	3	0	270	0	13	29	24
25	132	54	2	55	246	0	6	3	260	35	20	36	23
26	179	1	4	11	237	24	10	26	254	32	37	47	22
27	196	8	7	13	232	40	17	31	250	39	155	58	21
28	202	12	11	43	229	29	33	33					20
29	204	13	19	122	6	39	139	30					19
30	204	13	36	19									18
31	202	47	149	10									17

Diagram illustrating the declination of the sun at various latitudes, showing the intersection of the sun's path (declination) and the observer's latitude (H. Merid.) to determine the sun's position (H. Aquilo).

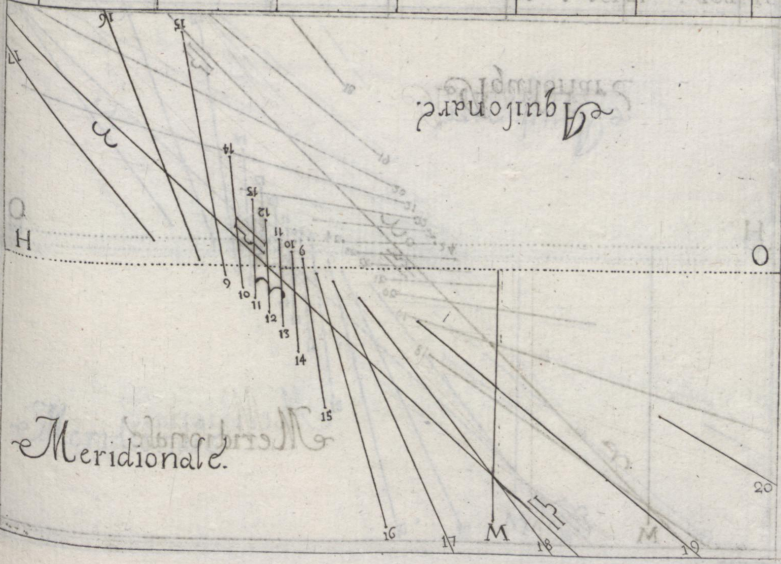
The diagram shows a grid of lines representing declination (H. Merid.) and latitude (H. Aquilo). The sun's path is shown as a curve intersecting these lines. The intersection points are labeled with numbers corresponding to the declination values in the table above.

Key labels in the diagram include:

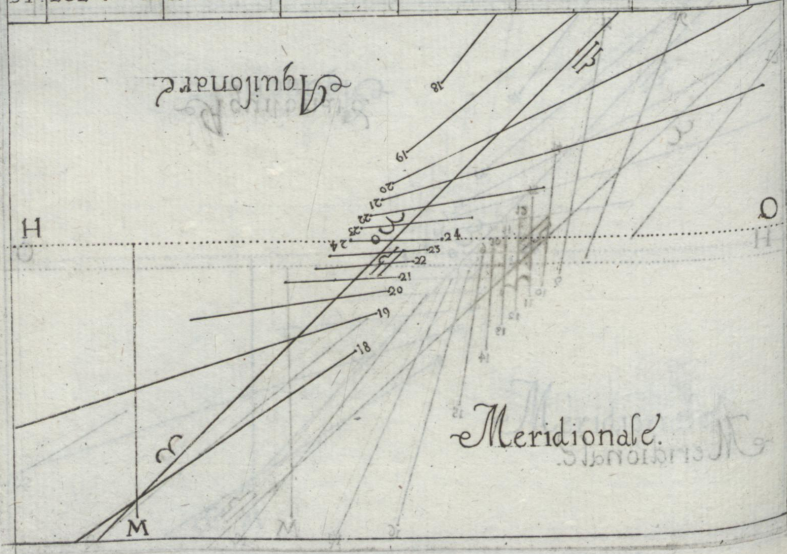
- H. Merid. (Horizontal Meridian)
- H. Aquilo (Horizontal Aquilo)
- Meridionale (Meridional)
- M (Marker at the intersection of the sun's path and the horizontal meridian)



Tab. CIV.		Declinatio ad Ort. Gra. 77. Lat. 45.									
cri. bra.	H. Agul.	H. Metu.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Agul.	H. Metu.	
			Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
			G.	M. P.	M. G.	M. P.	M. G.	M. P.			M.
	4. 7	20	291	37 83	57					4	
	10. 8	19	292	30 29	48					5	
	44. 5	18	291	49 16	42	315	45 74	55		6	
	24. 4	17	288	39 10	20	318	19 27	37		7	
	16. 3	16	280	10 6	20	321	37 14	62 339	54 80	8	
	2. 2	15	256	32 31	43	326	43 8	57 344	11 30	14 9	
	44. 1	14	206	8 3	18	337	10 5	78 350	53 17	45 10	
	29. 24	13	173	27 15	0 20	12	4 2	0 17 1	31 11	57 11	
	36. 23	12	161	45 8	0 31	90	0 2	24 46 18	16 8	50 12	
	47. 22	11	157	22 14	0 14	114	30 3	0 49 41	44 7	42 13	
	58. 21	10	156	0 29 24	0 0 0	123	16 10	0 8 66	3 8	28 14	
	20	9	156	27 53	21	127	47 16	0 57 84	15 11	10 15	
	Pol. 19	8				130	46 32	0 4 95	55 16	18 16	
	M. 18	7				133	26 119	32 103	15 26	43 17	
	7. 17	6						107	56 61	23 18	

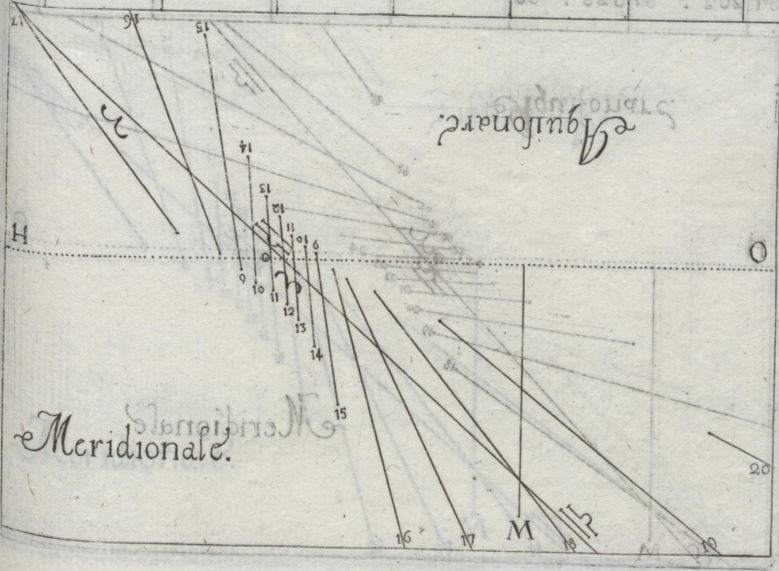


Tab. CIVI.		Declinatio ad Occas. Gra. 77. Lat. 45.										H. Aquilae		
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canceri.									
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.							
17							18	29	47	4	73			
18			44	15	74	55	13	16	23	23	6			
19	69	11	355	34	41	7	27	51	5	14	46	5		
20	67	43	42	238	62	14	62	352	3	10	820	4		
21	67	40	21	233	57	8	157	332	9	8	667	3		
22	69	32	12	42	22	50	5	307	13	7	48	2		
23	75	16	7	53	357	46	2	285	6	9	25	1		
24	90	10	4	40	270	0	2	270	0	13	2	24		
25	130	28	3	85	245	10	5	260	28	19	31	23		
26	176	10	4	113	236	44	10	254	27	35	50	22		
27	194	30	7	9	232	13	16	257	58	133	89	21		
28	201	17	11	34	229	14	32	4	58	78	20	20		
29	203	38	18	54	226	34	119	32						
30	203	54	35	31										
31	202	42	138	38										
											At. Pol.		19	
											P. M.		18	
											74		55	17



Tab. CLVII. Declinatio ad Ort. Gra. 78. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Aquilo.
	Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra	
G	M P	MG	M P	MG	M P	M	
20	291	53424	33				4
19	292	2031	39	1831	41		5
18	291	3217	20315	4281	6		6
17	288	1410	43318	127	56		7
16	279	506	37321	418	21339	4483	488
15	257	193	58325	369	9343	4530	429
14	209	403	22334	525	6350	917	5210
13	175	545	196	382	150	2611	5611
12	163	98	4590	02	3316	528	4512
11	158	1114	2115	455	3440	287	3013
10	156	3123	41123	519	4955	268	1014
9	156	4051	30127	616	3084	810	4615
8			131	230	5395	5915	4116
7			133	27104	15103	2225	3017
6					107	5955	4418

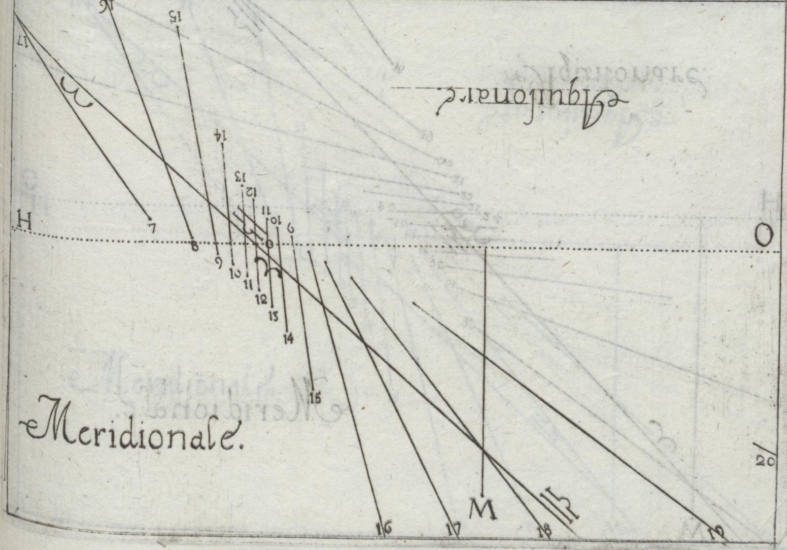


45.
ri. HA
ora. quid
M
15 7
38 0
49 5
17 4
58 3

33 2
4 1
33 24
1 23
42 22

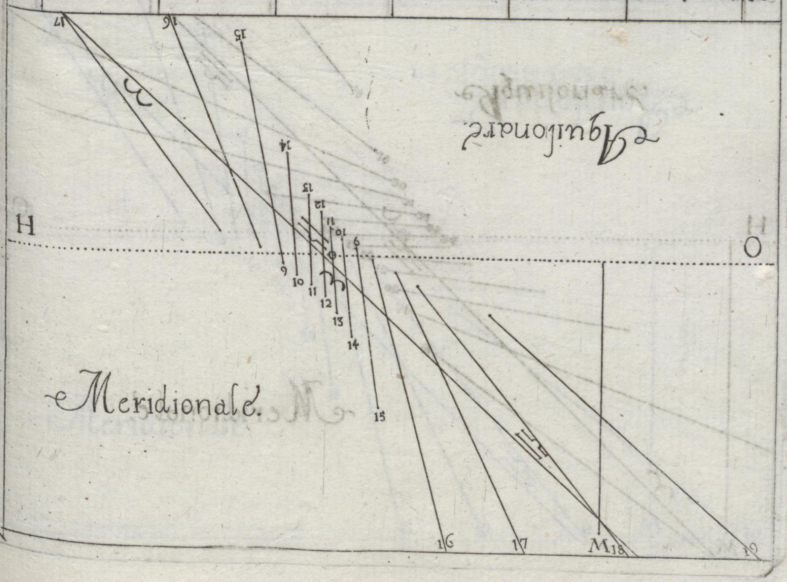
50 21
20
Do 19
M 18
6 17

Tab. CLIX. Declinatio ad Ort. Gra. 79. Lat. 45.									
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.		
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.	
	G.	M.	P.	M.	G.	M.	P.	M.	
20	291.	31	109.	17					4
19	292.	12	32.	51					5
18	291.	19	17.	55	315.	32	87.	47	6
17	288.	0	11.	3	317.	38	28.	47	7
16	279.	35	6.	52	320.	27	15.	40	8
15	257.	55	4.	10	324.	33	9.	20	9
14	212.	24	3.	28	332.	46	8.	12	10
13	178.	0	5.	18	1.	28	2.	15	11
12	164.	23	8.	40	90.	0	2.	20	12
11	158.	56	13.	48	116.	40	5.	21	13
10	156.	58	23.	18	124.	42	9.	32	14
9	156.	53	50.	12	128.	42	16.	28	15
8					131.	15	29.	48	16
7					133.	28	96.	34	17
6								108.	18

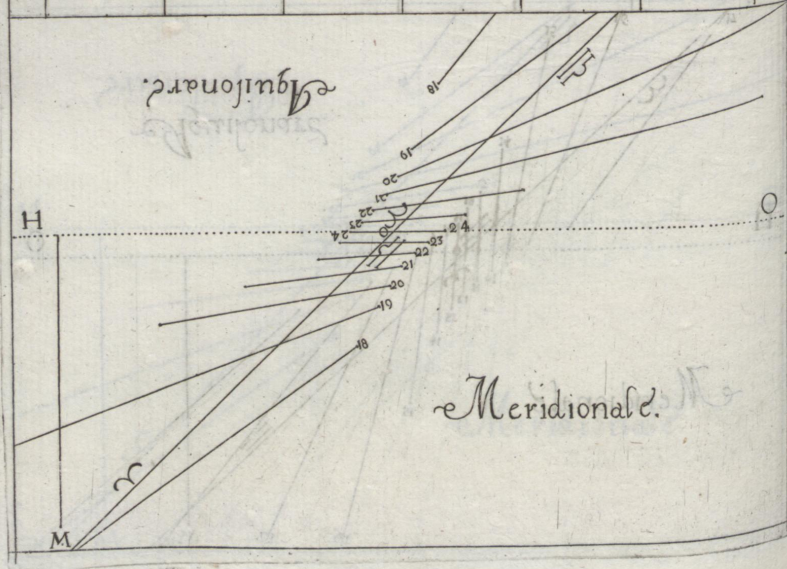


5.	
cri.	H. Aquil.
bra.	
M	
26 7	
48 6	
53 5	
15 4	
53 3	
21 2	
46 1	
8 24	
22 23	
10 22	
13 21	
20	
Pol.	
M	
47 17	

Declinatio ad Ort. Gra. 80. Lat. 45.											
Tropie. Capric.		Aquinoccialis.				Tropie. Cancr.					
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
H. Merid.	G.	M	P.	M	G.	M	P.	M	G.	M	P.
20	291	25	136	45							
19	292	5	34	37							
18	291	5	18	36	315	33	97	33			
17	287	39	11	27	317	29	29	33			
16	279	21	7	10	319	55	16	4	339	29	89
15	258	41	4	25	323	30	91	32	343	2	31
14	215	33	3	36	330	43	5	20	348	53	16
13	180	22	5	17	335	57	2	15	358	7	11
12	163	47	8	34	90	0	2	16	14	15	8
11	159	39	13	37	117	41	5	18	37	56	7
10	157	26	22	51	125	22	9	16	64	9	72
9	157	8	48	19	129	8	15	8	35	83	53
8					131	35	28	37	96	1	14
7					133	32	87	3	103	40	23
6									108	13	48



Tab. CLXII		Declinatio ad Occas. Gra. 80. Lat. 45.											
H Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H Aequi.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
17									19	22	50	57	7
18					44	35	97	33	14	47	24	12	6
19					42	31	29	33	7	35	14	57	5
20	68	0	51	24	40	5	16	4	355	37	10	15	4
21	68	18	33	39	36	30	9	32	336	23	7	44	3
22	70	26	14	3	29	17	5	20	310	22	7	18	2
23	76	18	8	50	4	3	2	15	386	16	8	27	1
24	90	0	5	26	270	0	2	6	270	0	11	41	24
25	122	40	3	38	242	19	5	8	260	6	17	35	23
26	167	40	4	18	234	38	9	15	254	9	30	28	22
27	189	29	6	59	230	52	15	35	250	31	82	51	21
28	197	59	11	12	228	25	28	37					20
29	201	59	17	59	226	28	87	13					19
30	202	48	33	28									18
31	202	31	111	3									17



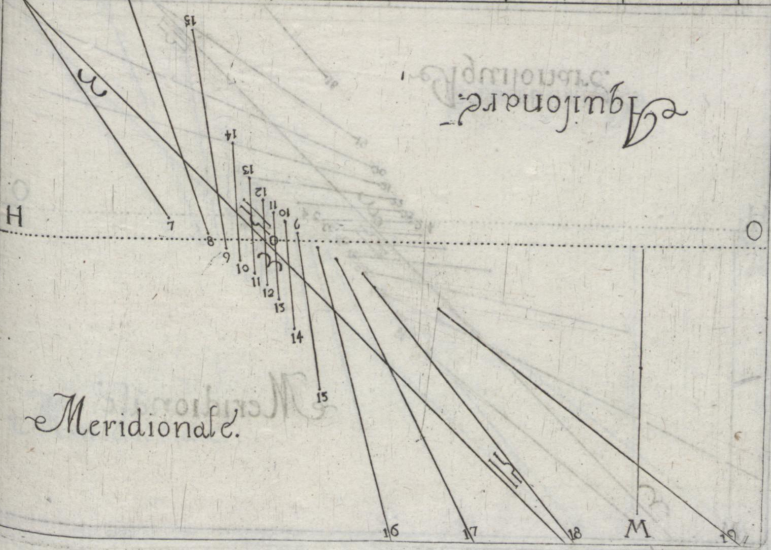
45.

cri.	H. Aquil.
bra.	M
57 7	
42 6	
57 5	
15 4	
44 3	
51 2	
27 1	
41 24	
35 23	
28 22	
51 21	
20 20	
Do. 19	
M 18	
33 17	

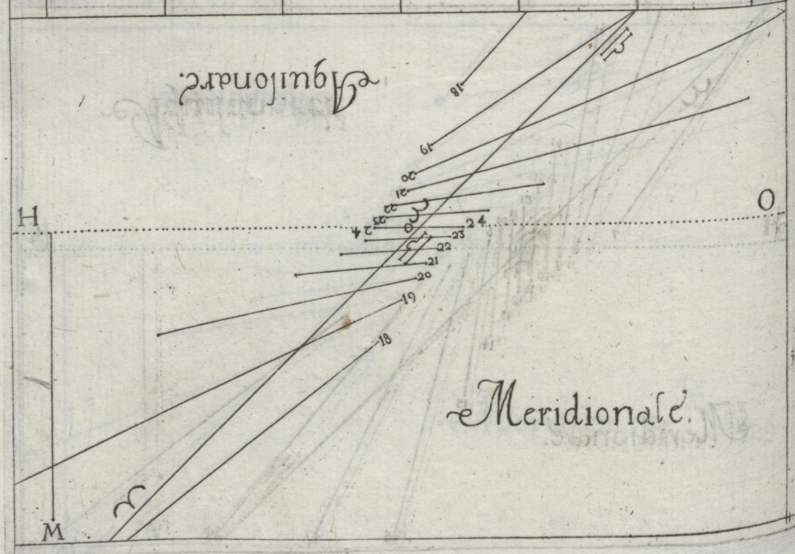
Tab. CLXIII.

Declinatio ad Ort. Gra. 81. Lat. 45.

H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G	M	P	M	G	M	P	M	G	M	P	M	
20	291	28	158	23									4
19	291	56	36	29									5
18	290	51	19	15	315	22	108	24					6
17	287	20	11	49	317	8	30	55					7
16	279	37		26	319	20	16	28	339	22	96	20	8
15	259	24		38	322	31	9	44	342	40	32	6	9
14	217	53	3	44	328	34	5	27	348	15	18	16	10
13	182	32	5	18	345	52	2	16	357	28	11	58	11
12	167	28		31	90	0	1	54	12	49	8	31	12
11	160	36	13	28	118	55	4	53	36	35	6	58	13
10	157	56	22	33	126	10	9	0	63	26	7	23	14
9	157	20	47	10	129	36	15	6	83	45	9	42	15
8					131	58	27	36	96	14	14	9	16
7					133	47	79	21	103	43	22	31	17
6									108	13	45	7	18



Tab. CLXIV.		Declinatio ad Occas. Gra. 81. Lat. 45.												H. Aquil.
H. Merid.	p.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
		G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	
17										19	24	52	5	7
18					44	38	108	24	15	13	24	26	6	
19					42	52	30	55	8	17	15	1	5	
20	68	5	55	36	40	40	16	28	356	44	10	12	4	
21	68	26	24	38	37	29	9	44	337	44	7	37	3	
22	70	43	14	31	31	26	5	27	311	25	6	55	2	
23	76	26	9	8	9	8	2	16	286	37	8	11	1	
24	90	0	5	41	207	0	1	54	270	0	11	19	24	
25	122	6	3	49	241	5	4	55	260	2	17	4	23	
26	165	3	4	21	233	50	9	0	254	3	29	8	22	
27	187	47	6	56	2	24	15	26	250	27	76	6	21	
28	193	13	11	3	228	2	27	36	01				20	
29	201	12	17	47	226	13	79	121						
30	202	16	32	29										
31	202	22	105	19										
												Alt. Pol.		
												P. M.		
												108 . 24		
												17		

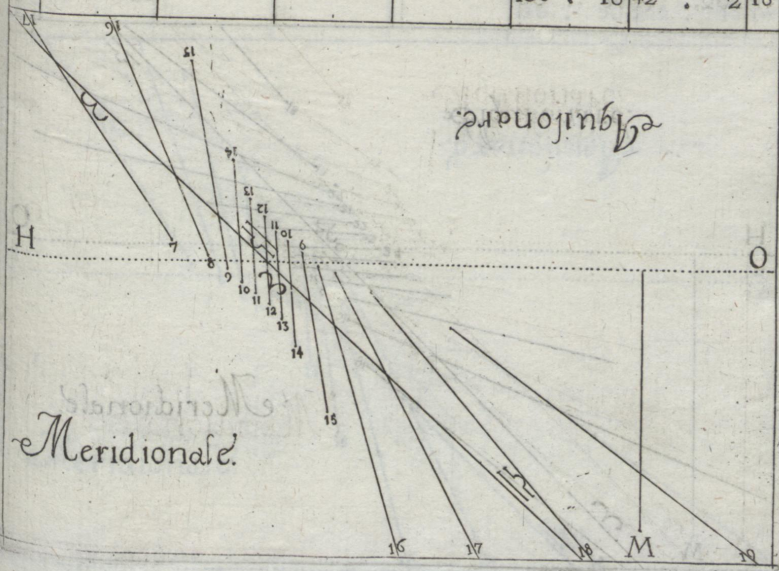


45.
ri. H. Aquil.
ora. M.
5 7
26 6
1 5
12 4
37 3

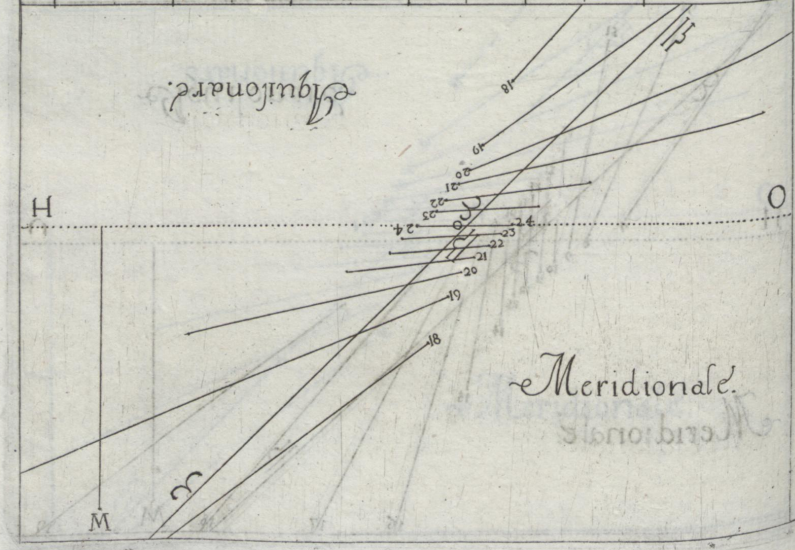
55 2
11 1
19 24
4 23
8 22

6 21
20
Pol. 19
M. 18
24 17

Tab. CLXV. Declinatio. ad Ort. Gra. 82. Lat. 45.									
H. Merid.	Tropie. Capric.		Aequinoctialis.			Tropie. Cancr.			H. Aquilo
	Arcus. Vmbra.		Arcus. Vmbra.		Arcus. Vmbra.				
	G.	M P.	M G.	M P.	M G.	M P.	M		
20	291	26 173	27						4
19	291	49 38	34						5
18	290	37 19	58 315	18 121	39				6
17	287	3 12	14 316	48 31	59				7
16	278	48 7	44 318	46 16	51 339	15 101	8		8
15	259	36 4	52 321	31 9	57 342	19 32	39		9
14	220	27 3	53 327	5 5	35 347	36 18	24		10
13	184	48 5	18 345	39 2	19 356	29 12	0		11
12	168	31 8	27 90	0 1	41 11	31 8	27		12
11	161	28 13	22 120	1 4	42 35	12 6	48		13
10	158	24 22	12 126	56 8	44 63	21 7	8		14
9	157	33 45	48 130	2 14	46 83	35 9	22		15
8	158	15 724	6 132	7 26	42 96	20 13	38		16
7			133	48 73	25 103	49 21	37		17
6					108	18 42	2		18

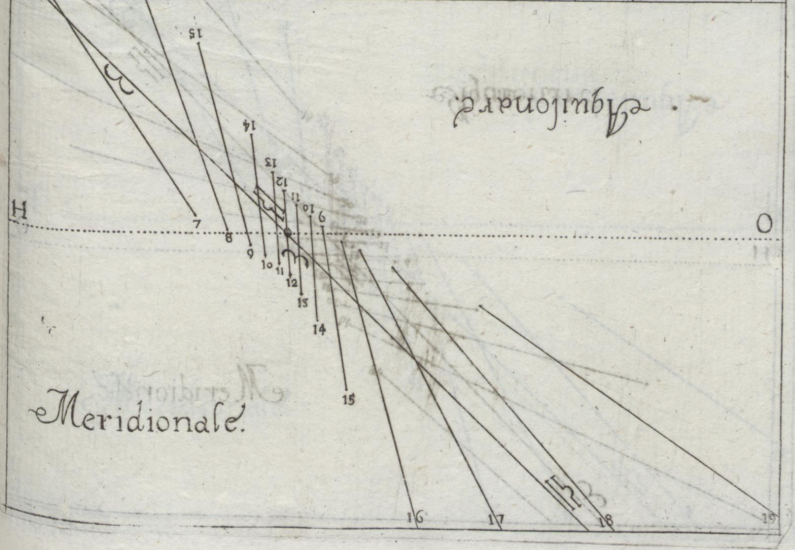


Tab. CLXVI.		Declinatio ad Occas. Grd. 82. Lat. 45.									
H. Merid.	C.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
		G.	M	P.	MG.	M	P.	MG.	M	P.	
17								19	38	53	32.7
18					44	42	121	39	15	42	44.6
19					43	12	31	39	9	6	15.5
20	68	10	59	58	41	14	16	51	357	55	10.4
21	68	37	25	41	38	29	9	57	339	13	7.3
22	71	1	15	0	32	55	5	55	312	25	6.2
23	76	47	9	27	14	21	2	19	287	3	7.1
24	90	0	5	56	270	0	1	41	270	0	10.24
25	125	25	4	1	239	59	4	42	259	55	16.23
26	162	24	4	25	233	4	8	44	253	57	27.45
27	186	3	6	54	229	58	14	46	250	24	67.36
28	196	9	10	56	227	53	26	42			20
29	200	34	17	35	226	10	73	25			19
30	202	16	31	49							18
31	202	14	98	56							17



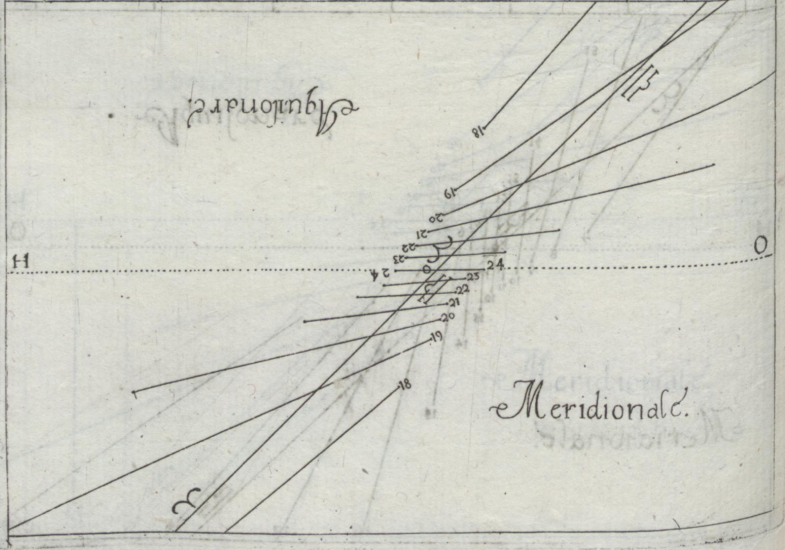
45.	
cri.	H. Aquilo
bra.	
M	
32. 7	
44. 6	
6. 5	
12. 4	
30. 3	
42. 2	
53. 1	
56. 24	
26. 23	
45. 22	
36. 21	
20	
Pol. 19	
M. 18	
39. 17	

Tab. CLXVII. Declinatio ad Ortū Gra. 83. Lat. 45.									
Tropic. Capric.		Aequinoctialis.		Tropic. Canceri.					
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
G.	M P.	M G.	M P.	M G.	M P.	M			
19. 291.	42. 40.	57.							5.
18. 290.	26. 20.	44. 318.	15. 140.	57.					6.
17. 286.	45. 12.	38. 316.	39. 33.	20.					7.
16. 278.	34. 8.	13. 18.	14. 17.	19. 339.	9. 108.	7. 8.			8.
15. 259.	57. 5.	7. 320.	38. 10.	10. 341.	58. 33.	11. 9.			9.
14. 222.	36. 4.	2. 325.	26. 5.	43. 347.	0. 18.	36. 10.			
13. 187.	2. 5.	21. 341.	3. 2.	22. 358.	30. 12.	3. 11.			
12. 169.	50. 8.	22. 90.	0. 1.	28. 10.	9. 8.	24. 12.			
11. 162.	19. 13.	13. 121.	29. 4.	30. 33.	47. 6.	39. 13.			
10. 158.	56. 21.	53. 127.	44. 8.	29. 60.	54. 6.	55. 14.			
9. 157.	49. 44.	43. 130.	43. 14.	20. 83.	28. 9.	1. 15.			
8. 158.	17. 572.	56. 132.	34. 25.	43. 96.	25. 13.	11. 16.			
7. 158.		183.	56. 67.	29. 103.	58. 20.	48. 17.			
6. 158.				108.	23. 39.	42. 18.			
5. 158.				110.	50. 222.	48. 19.			



Tab. CLXVIII. Declinatio ad Occas. Gra. 83. Lat. 45.

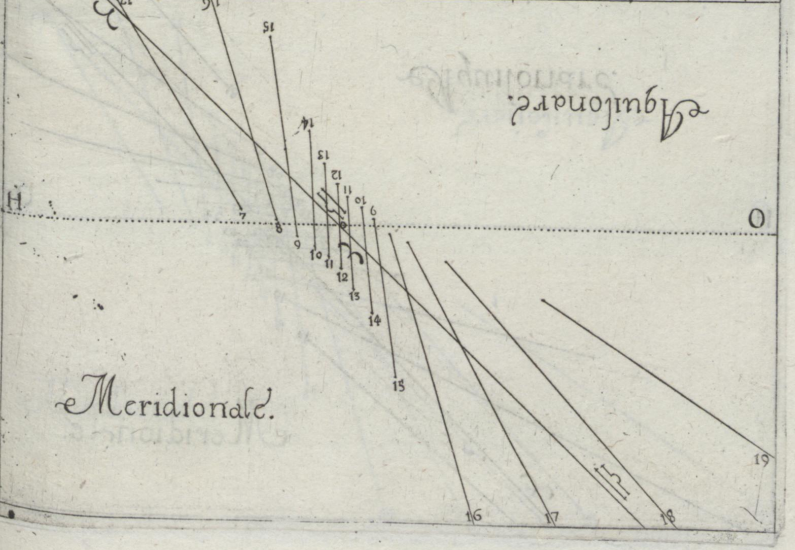
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquile
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.
17					19	49 55	2 7
18			44	45 140	57 16	4 25	8 6
19			43	21 33	20 9	50 15	12 5
20	68	12 65	56 41	46 17	19 359	5 10	1 4
21	68	46 26	54 39	22 10	10 340	43 7	25 3
22	71	14 25	33 34	34 5	43 313	51 6	30 2
23	77	4 9	48 18	57 2	22 287	32 7	36 1
24	90	0 6	12 270	0 1	28 270	0 10	33 24
25	119	7 4	12 238	31 4	30 259	47 15	52 23
26	159	54 4	29 232	16 8	29 253	48 26	33 22
27	184	19 6	53 229	17 14	20 250	20 62	13 21
28	195	6 10	53 227	26 25	43		20
29	199	55 17	19 226	4 67	29		29
30	201	53 31	15				18
31	202	6 94	11				17



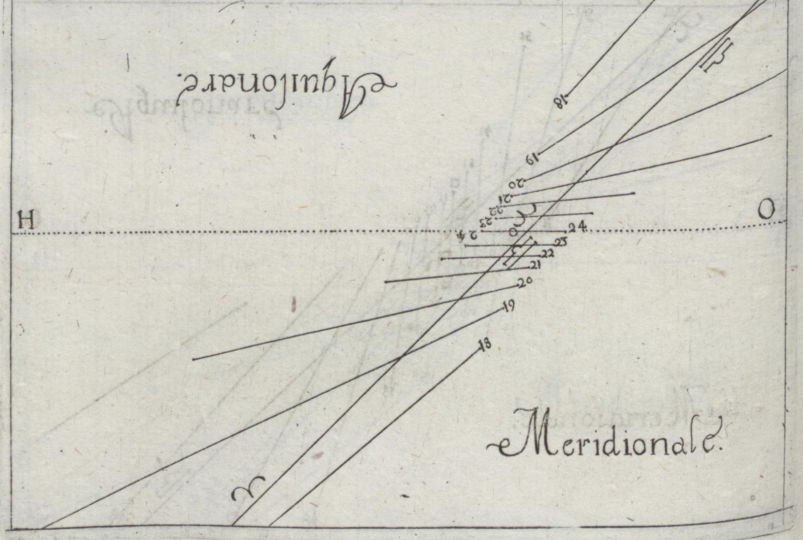
45.
cri. H. Aquilo
mbra. M
2 7
8 6
12 5
1 4
25 3
30 2
36 1
33 24
52 23
33 22
13 21
20
Do 29
M 18
57 17

Tab. CLXIX. Declinatio ad Ort. Gra. 84. Lat. 45.

H. Aquilo	Tropie Capric.		Aequinoctialis.		Tropie Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G	M P	MG	M P	MG	M P	M
17	291	37 43	28				5
18	290	14 21	32 315	14 162	8		6
17	286	28 13	4 316	29 34	30		7
16	278	26 8	20 317	39 17	41 339	3 113	14 8
15	264	24 5	22 319	43 10	24 341	39 33	46 9
14	224	54 4	12 323	42 5	52 346	21 18	44 10
13	189	19 5	23 336	51 2	27 354	32 12	4 11
12	171	21 8	20 90	0 1	16 80	43 8	20 12
11	163	13 13	8 122	49 4	18 32	14 6	30 13
10	159	28 21	34 128	36 8	15 61	15 60	38 14
9	158	5 43	34 131	14 14	80 83	20 8	42 15
8	158	18 412	29 132	44 24	58 96	33 12	43 16
7			133	59 63	24 104	8 19	59 17
6					108	30 37	2 18
5					110	52 160	52 19

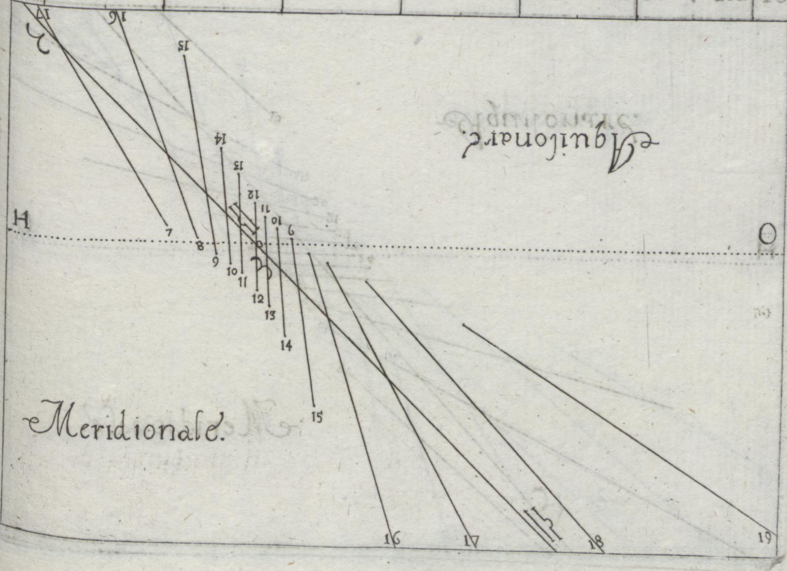


Tab. CLXX.		Declinatio ad Occas. Gra. 84. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquila
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P	MG	MP	MG	MP	MG	MP	MG	MP	M		
17										20	2 56	37 7	
18					44	46 162	8	16	37 25	21	6		6
19					43	31 34	30	10	38 15	18	5		5
20	68	18 72	6	42	21 17	41	0	16 10	11	4			
21	68	57 28	1 40	13 10	24	342	14	7	19	3			
22	71	30 15	58	36	18 5	52	315	11	6	19	2		
23	77	24 10	8 23	9 2	27	288	0 7	19	1				
24	90	0 6	28 270	0 1	16	270	0 10	11	24				
25	117	41 4	26 237	114	18	259	40 13	19	23				
26	157	23 4	36 231	248	15	253	41 25	23	22				
27	182	35 6	52 228	46 14	0	250	16 56	47	21				
28	194	1 10	44 227	16 24	58				20				
29	199	16 17	8 226	1 63	24				Alt. Pol				19
30	201	33 30	37						P. M				18
31	201	59 89	9						162 . 8				17



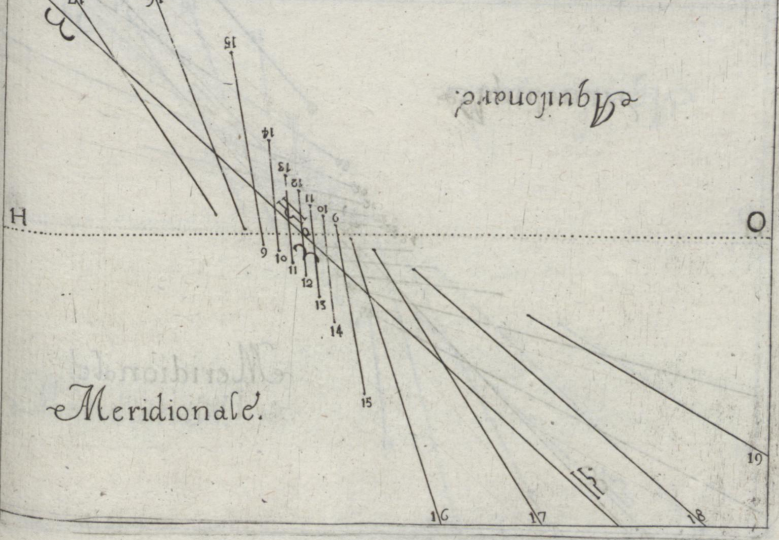
5.	cri.	H. Aquila
	bra	
	M	
	37	7
	21	6
	18	5
	11	4
	19	3
	19	2
	19	1
	11	24
	19	23
	23	22
	47	21
	20	
	Pol	19
	M	18
	8	17

Tab. CLXXI. Declinatio ad Ort. Gra. 85. Lat. 45.											
Tropie. Capric.			Aequinoctialis.			Tropie. Canceri.			H. Aquila		
Arcus.			Arcus.			Arcus.			H. Aquila		
Vmbra.			Vmbra.			Vmbra.			H. Aquila		
G.	M	P.	G.	M	P.	G.	M	P.	G.	M	P.
19	291	30 46	32								
18	290	0 22	26 315	47	194	22					
17	286	16 13	30 316	10	36	11					
16	279	9 8	40 317	11	18	16 338	56	122	1	8	
15	260	43 5	39 318	47	10	39 341	19	34	20	9	
14	226	40 4	26 322	40	6	2 345	42	18	54	10	
13	191	29 5	26 332	11	2	34 353	29	12	6	11	
12	172	39 8	19 90	0	1	3 7	16	8	16	12	
11	164	4 12	56 124	19	4	5 30	34	6	21	13	
10	160	0 21	16 129	30	8	60	6	6	23	14	
9	158	22 42	229 131	50	13	33 83	9	8	24	15	
8	158	22 343	44 133	4	24	30 96	34	12	18	16	
7			134	12	58	33 103	39	19	16	17	
6						108	37	35	26	18	
5						110	54	136	21	19	

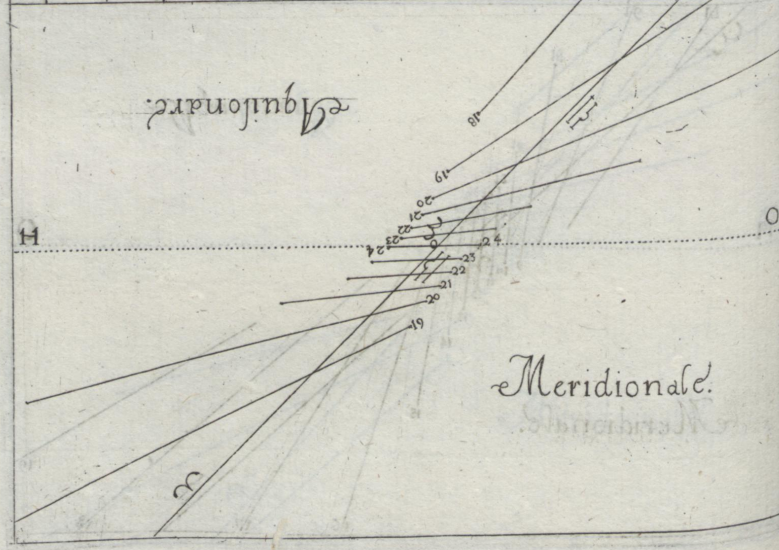


45.	
cri.	H. Agula
bra.	
M	
23 7	
40 6	
24 5	
12 4	
13 3	
8 2	
2 1	
49 24	
48 23	
20 22	
48 27	
20	
19	
M 18	
22 17	

Tab. CLXXIII Declinatio ad Ort. Gra. 86. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Agula	
	Arcus		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.		
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.
19	291.	26	49	40							5
18	289.	52	23	17 315	19	242.	28				6
17	285.	59	13	59 315	48	37	20				7
16	277.	57	8	57 316	50	18	38 338	52	128	33	8
15	261.	4	5	32 318	10	10	54 340	59	35	1	9
14	228.	34	4	32 320	18	6	22 345	8	19	6	10
13	193.	36	5	28 327	8	2	31 352	32	12	9	11
12	174.	9	8	15 90	0	0	50 4	35	7	57	12
11	164.	58	12	50 126	12	3	55 29	0	6	14	13
10	160.	32	20	58 130	23	7	47 59	13	6	10	14
9	158.	36	41	26 132	18	13	17 82	58	8	6	15
8	158.	23	286	21 133	12	23	26 96	45	11	52	16
7				134	16	55	44 104	26	18	32	17
6							108	43	33	29	18
5							110	56	111	40	19



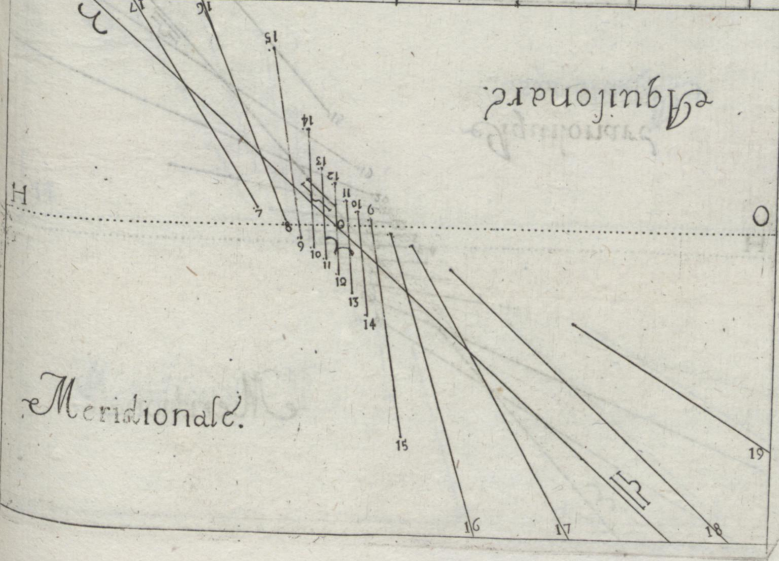
Tab. CLXXIV		Declinatio ad Occas Gra. 86. Lat. 45.												
H. Merid.	Tropic. Capric.		Aequinoctialis				Tropic. Cancr.		H. Aquilo					
	Arcus.		Vmbra.		Arcus.		Vmbra.							
	G.	M/P	M/G	G.	M/P	M/G	M/P	M						
17							20	26	60	9	7			
18				44	41	242	28	17	31	26	2	6		
19				44	12	37	20	12	10	15	31	5		
20	68	24	89	56	43	10	18	38	2	36	10	12	4	
21	69	15	30	45	41	50	10	54	345	27	7	9	3	
22	71	57	17	13	39	42	6	22	317	57	5	57	2	
23	77	48	10	50	32	52	2	31	282	5	6	47	1	
24	90	0	7	1	270	0	0	50	270	0	9	29	24	
25	115	22	4	52	233	48	3	55	259	22	14	17	23	
26	152	47	4	48	229	37	7	47	253	24	23	20	22	
27	179	5	6	51	227	42	13	17	253	7	48	48	21	
28	191	50	10	34	226	48	23	26				20		
29	197	57	16	44	225	44	55	44				19		
30	200	49	29	30								18		
31	201	43	81	16								242	28	17



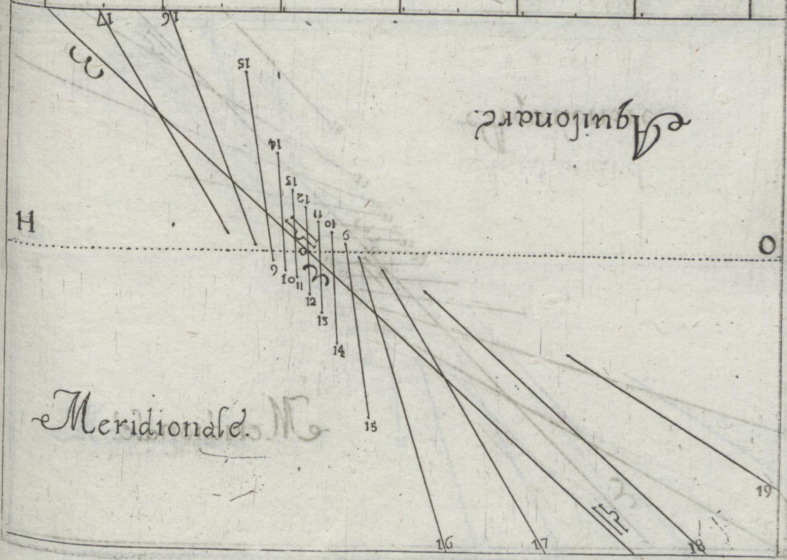
Tab.
CLXXV.

Declinatio ad Ort. Gra. 87. Lat. 45.

H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancer.				H. Aquilo	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	C.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
19	291	21	53	40										5
18	289	39	24	16	315	5	335	15						6
17	285	44	14	29	316	40	39	10						7
16	271	46	9	16	316	18	20	36	338	44	144	26		8
15	261	19	6	6	317	12	11	11	340	39	35	40		9
14	230	10	4	43	318	57	6	23	344	29	19	18		10
13	295	44	5	32	324	38	2	48	351	30	12	13		11
12	175	37	8	14	90	0	0	48	4	26	8	16		12
11	165	51	12	44	127	53	3	44	27	16	6	15		13
10	161	4	20	43	133	4	7	34	58	9	5	58		14
9	158	52	40	26	133	24	13	3	82	46	7	48		15
8	158	24	236	54	133	54	22	38	96	49	11	29		16
7					134	34	52	16	104	36	17	49		17
6									108	40	31	55		18
5									110	58	98	39		19

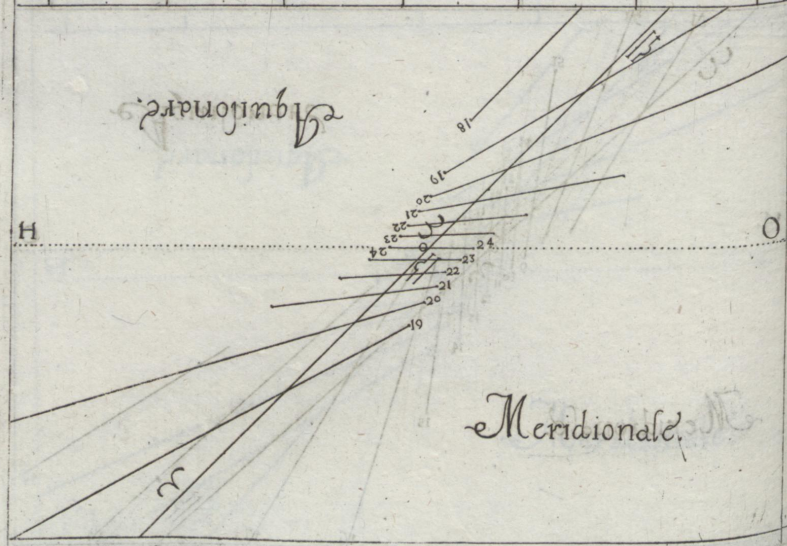


Tab. CLXXVII		Declinatio ad Ort. Gra. 88. Lat. 45.										H. Merid.
Tropic' Capric.				Aequinoctialis.				Tropic' Cancr.				H. Aquilo
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
G.		M P		M G		M P		M G		M P		M
19	291	16	57	49								5
18	289	32	25	17	315	2	485	17				6
17	285	33	14	58	315	32	40	44				7
16	277	38	9	31	216	5	19	40	338	42	148	37
15	261	38	6	23	316	23	11	26	340	20	36	21
												9
14	231	49	4	55	317	38	6	33	343	54	19	29
13	297	43	5	36	320	35	2	55	350	35	12	27
12	177	4	8	12	90	0	0	25	2	56	8	12
11	166	44	12	37	129	53	3	3	25	30	5	59
10	161	36	20	25	133	13	7	20	57	5	5	44
												14
9	159	39	35	133	34	12	37	82		36	7	30
8	158	26	218	34	133	59	22	2	97	2	11	4
7				134	36	49	40	104	46	17	14	17
6								108	57	30	19	18
5								111	1	85	23	19



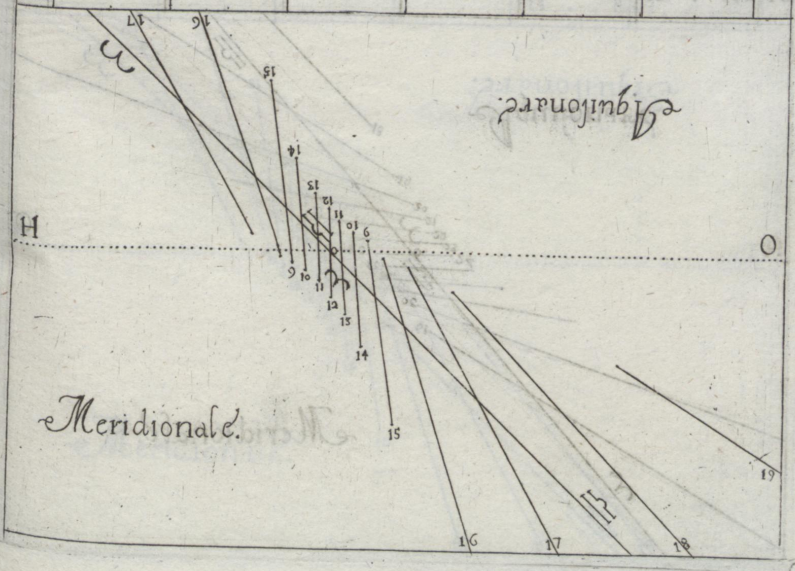
Tab. CLXXVIII Declinatio ad Occas. Gra. 88. Lat. 45.

H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Canceri.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.	M.
17					20	47 64	23 71
18			44	53 485	17 18	24 26	46 61
19			44	28 40	44 13	41 15	46 5
20	68	31 119	11 43	53 19	40 4	58 10	25 4
21	69	29 33	57 43	37 11	26 348	45 7	12 3
22	72	22 18	30 42	22 67	33 321	7 5	137 2
23	78	16 11	37 39	23 27	55 270	19 6	16 1
24	90	0 7	35 270	0 0	25 270	0 8	49 24
25	113	24 5	19 230	7 3	3 259	4 13	19 23
26	148	31 5	2 226	47 7	20 253	4 21	131 22
27	175	37 6	52 226	21 12	37 249	56 42	41 21
28	189	36 10	26 226	31 22	2 248	36 340	48 20
29	196	35 16	22 225	24 49	40		
30	200	2 28	31			Alc. Pol.	19
31	202	26 74	38			P. M.	18
						485	17 17



45.	
cri.	H. Aquilo
mbra.	
M	
23	7
46	6
46	5
25	4
12	3
137	2
16	1
49	24
19	23
131	22
41	21
48	20
19	19
M	18
17	17

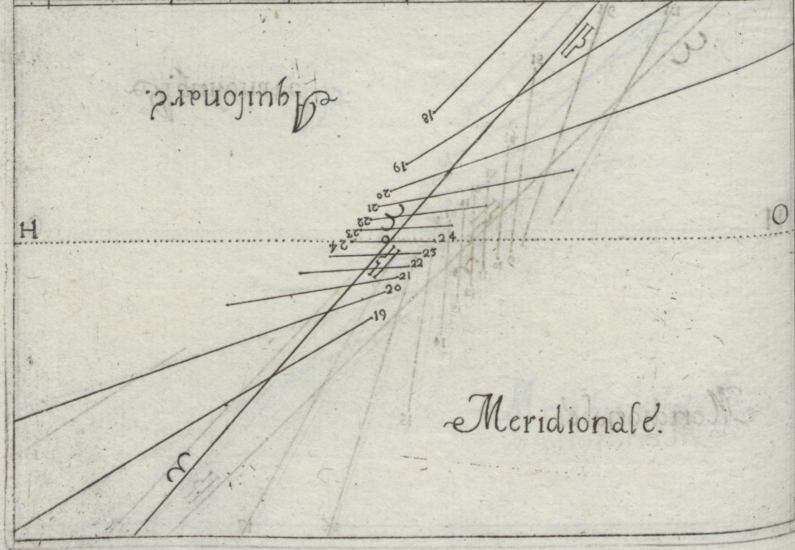
Declinatio ad Ort. Gra. 89. Lat. 45.									
Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.					
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.	
G. M P. M G. M P. M G. M P. M									
19	291 .	1063 .	25						5
18	289 .	1926 .	26315 .	1082 .	43				6
17	283 .	1815 .	30315 .	1442 .	46				7
16	277 .	2810 .	0315 .	3020 .	13338 .	38154 .	138		8
15	261 .	446 .	40315 .	4411 .	45339 .	5937 .	69		9
14	233 .	195 .	7316 .	196 .	44343 .	2019 .	4210		
13	299 .	465 .	144318 .	83 .	14349 .	3712 .	2011		
12	178 .	308 .	1390 .	00 .	131 .	298 .	1312		
11	167 .	4212 .	30132 .	283 .	3323 .	395 .	5513		
10	162 .	1020 .	9133 .	487 .	8858 .	565 .	3314		
9	159 .	2438 .	40134 .	2212 .	2082 .	217 .	1315		
8	158 .	30188 .	859134 .	3621 .	2597 .	910 .	4216		
7	152 .	41 .	134 .	4947 .	13104 .	5716 .	3917		
6	141 .	9 .			109 .	628 .	5818		
5	131 .	880 .			111 .	477 .	1619		



CLXXX

Declinatio ad Occas. Gra. 89. Lat. 45.

H. Merid.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G	MP	MG	MP	MG	MP	M
17					21	56 66	139 7
18			44	59 982	43 18	48 27	111 6
19			44	46 42	46 14	24 15	84 5
20	68	32 154	13 44	30 20	13 6	08 10	17 4
21	69	36 35	54 44	16 11	45 350	26 8	131 5
22	72	35 19	14 43	41 6	44 322	57 51	54 21
23	78	29 12	0 41	52 3	84 291	3 6	0 11
24	90	0 7	53 270	0 0	13 270	0 8	23 24
25	112	36 3	53 227	32 3	23 258	51 12	47 23
26	146	41 5	10 226	15 7	8 252	56 20	44 22
27	173	54 6	52 225	38 12	20 249	50 40	17 21
28	188	26 10	22 225	24 21	23 248	834 210	5 15 20
29	195	51 16	12 225	11 47	13	Alr.	Pol 19
30	199	38 28	0 5			P	M 18
31	201	16 71	48			982	43 17

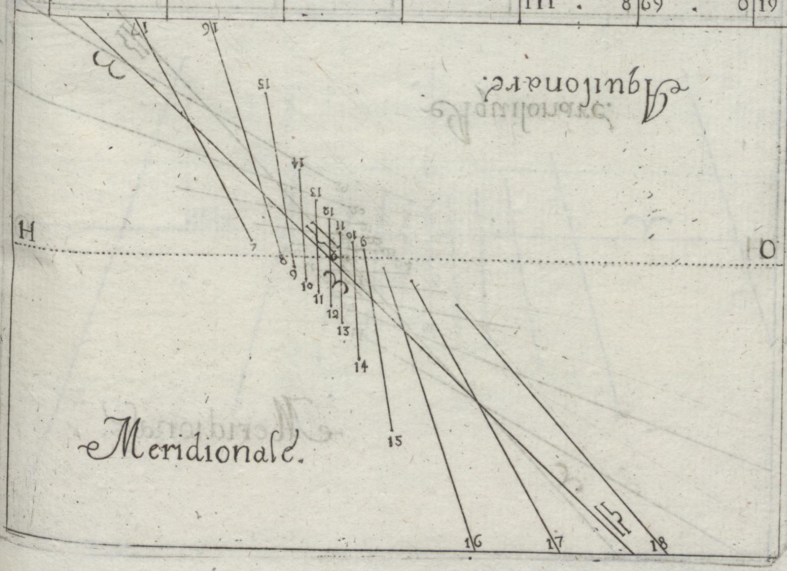


Tab. CLXXXI. Declinatio ad Ort. Gra. 90. Lat. 45.

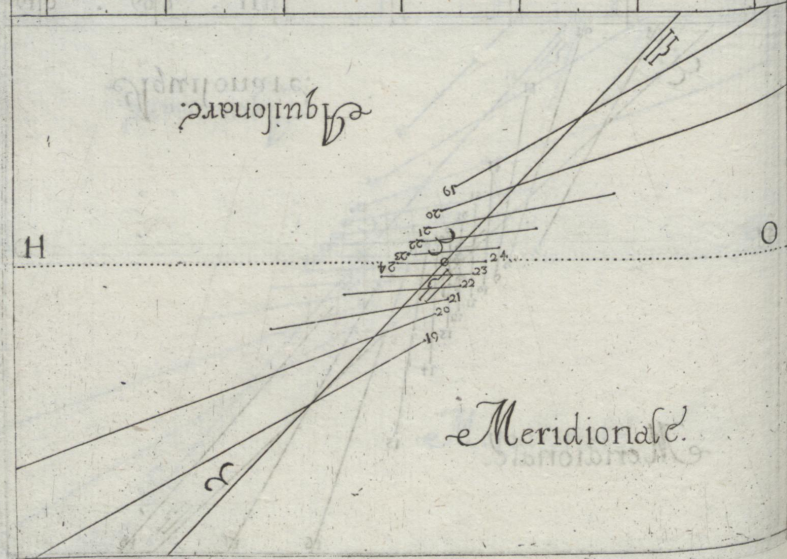
H. Merid.	Tropie Capric.		Aequinactialis.		Tropie Canceri.		H. Aquila
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.	M.
19	291	8 69	0				5
18	289	14 27	36				6
17	285	8 16	3				7
16	277	18 10	19				8
15	262	10 6	56				9
14	234	48 5	19				10
13	201	45 5	47				11
12	180	0 8	12				12
11	168	39 12	26				13
10	162	44 19	55				14
9	159	43 37	52				15
8	158	33 176	49				16
7							17
6							18
5							19

Infinita.

Duc lineam ad Altiud G45 et ibi fac puncta



Tab. CLXXXII		Declinatio ad Occas. Gra. 90. Lat. 45.										H. Aquilo									
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Merid.														
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.															
G.		M	P	MG	M	P	MG	M	P	M											
17							21	58	69	0	7										
18							19	14	27	36	6										
19							44	47	15	8	16										
20	68	33	176	49			20	47	7	18	10										
21	69	43	37	52			12	0	352	10	6										
Duc Lineam ad Altitud. Gr. 45. et ibi fac puncta Vmbrarum.												56	3								
																	6	56	324	48	5
																	3	13	241	48	5
																	0	0	270	0	8
																	3	13	258	39	12
																	6	56	252	44	19
22	72	44	19	55			12	0	249	43	37										
23	78	39	12	26			20	47	248	33	176										
24	90	0	8	12			44	47													
25	111	45	5	47																	
26	144	48	5	19																	
27	172	10	6	56																	
28	187	18	10	19																	
29	195	8	16	3																	
30	199	14	27	36																	
31	201	8	69	0																	



Tab. CLXXXIII. Pro Horologio Horizontali more antiquo ad La Gr. 45

H. Merid.	Tropic. Caprie.			Aguinoctialis.			Tropic. Cancr.			H. Aquilo				
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.						
	G	M	P	MG	M	P	MG	M	P	M				
12	124 .	20	Infinita.	90 .	0	Infinita.	55 .	40	Infinita.	12				
11	111 .	56	56 .	14	79 .	16	64 .	26	47 .	52	115 .	8	11	
10	98 .	46	25 .	30	67 .	46	31 .	46	39 .	27	60 .	47	10	
9	85 .	20	14 .	55	55 .	10	20 .	47	30 .	24	43 .	16	9	
8	68 .	33	9 .	20	39 .	14	15 .	29	20 .	43	33 .	20	8	
7	42 .	33	6 .	120	44	12 .	52	10 .	30	31 .	36	7		
6	360 .	0	4 .	44	0 .	0	12 .	0	360 .	0	30 .	28	6	
5	317 .	27	6 .	13	39 .	16	12 .	52	34	9 .	30	31 .	33	5
4	291 .	27	9 .	20	320 .	46	15 .	29	339 .	17	35 .	20	4	
3	274 .	40	14 .	53	304 .	50	20 .	47	329 .	36	43 .	16	3	
2	261 .	14	25 .	30	292 .	14	31 .	46	320 .	33	60 .	47	2	
1	248 .	4	56 .	14	280 .	44	64 .	26	312 .	8	115 .	8	1	

